Aquatic Enhancement
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West Otter Lake Aquatic Vegetation Management Plan Update, Steuben County, Indiana
2006

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Executive Summary

West Otter is a 118 acre glacial lake has been colonized by the invasive submersed exotic plant Eurasian watermilfoil, *Myriophyllum spicatum.* This non-native species has been interfering with boating and fishing which are popular activities at the lake. The milfoil growth also has the potential to negatively affect fish and wildlife by altering habitat and decreasing the diversity of West Otter Lake's plant community. Both lakeside residents and lake users who launch watercraft at the IDNR boat ramp have been affected by the problem. The purpose of this plan is to provide guidance to IDNR and the West Otter Lake Association in achieving the following goals: **1.** Restore and maintain a stable, diverse aquatic plant community that supports a good balance of predator and prey fish and wildlife species, good water quality, and is resistant to minor habitat disturbances and invasive species. **2.** Direct efforts to preventing and/or controlling the negative impacts of aquatic invasive species. **3.** Provide reasonable public recreational access to West Otter Lake while minimizing the negative impacts on plant, fish, and wildlife resources. This update to the 2005 Aquatic Plant Management Plan for West Otter Lake summarizes 2006 season plant management activities, the current character of the lake's plant community, and the response of lake-users to activities under the plan. It also provides a proposed course for future management that is consistent with the original plan goals. A Tier I plant survey was performed on West Otter Lake on 5/15/06. Fifteen acres of dense Eurasian watermilfoil growth were prioritized for treatment with 2, 4-D granular selective broad-leaf herbicide in West Otter Lake in 2006. This treatment was carried out on 5/18/06. A second Tier I survey was conducted on 8/4/06 and a Tier II plant survey was completed on 8/14/06. The surveys revealed that excellent control of Eurasian watermilfoil had been achieved in the treatment areas. While Eurasian watermilfoil plants were present in the treated areas, growth was light and scattered. Results were much better than in 2005 when nuisance levels of regrowth were present in much of the treatment area. Residents did indicate that regrowth occurred after the August surveys had been conducted. Based on the 2006 season results it's recommended that the West Otter Lake Association seek funding to repeat treatment of approximately the same acreage in the 2007 season with granular 2,4-D herbicide. Because significant regrowth was experience during the 2005 season, provisions should be made to repeat the 15 acre treatment within the 2007 season if necessary. Because significant problems were experienced with Curlyleaf pondweed it's recommended that an ultra-early contact herbicide treatment is conducted in problem shoreline areas to try to reduce the reproductive success (turion formation) of this plant. To avoid the possible development of eventual resistance to treatment a switch to another granular systemic herbicide for Eurasian milfoil control in alternate years may be advisable in future seasons if such a product should achieve EPA licensing, become available to the aquatic market, and prove efficacious. The estimated cost for the initial application of 2, 4-D to 15 acres in West Otter Lake is 6540.00 with an additional cost of 6540.00 if full re-treatment should be needed. The estimated cost of a 2.5 acre ultra-early contact herbicide treatment for Curlyleaf pondweed is 670.00. Because the spread of Purple loosestrife to area wetlands has implications for water quality, a lake-marginal treatment for this plant is also recommended for an estimated cost of $900.00. The estimated cost of planning and plant surveys for 2007 is 3100.00.

1.0 Introduction

Efforts to control vegetation have been ongoing at West Otter Lake since at least 1968. Prior to 2004 no comprehensive program existed to treat all the lake's significant milfoil growth. Treatments have been mostly funded by single property owners or small groups of property owners seeking relief from plant growth along their frontages/channels. In 2004 the West Otter Lake Association funded a widespread contact herbicide treatment of most of the colonized areas. Beginning in 2005 systemic herbicides have been used to treat the lake's Eurasian watermilfoil comprehensively through cost-share grants obtained by the West Otter Lake Association through the IDNR Lake and River Enhancement program. In 2006 the treatment of a 2.4 acre area of problem Curlyleaf pondweed also took place. The Curlyleaf treatment was funded by the lake association.

2.0 Watershed and Lake Characteristics

There have been no significant changes in the current year.
See: *Aquatic Plant Management Plan, West Otter Lake, Steuben County, Indiana* (Aquatic Enhancement & Survey, Inc. 2005)

3.0 Lake Uses

There have been no significant changes in the current year.
See: *Aquatic Plant Management Plan, West Otter Lake, Steuben County, Indiana* (Aquatic Enhancement & Survey, Inc. 2005)

4.0 Fisheries

There have been no significant changes in the current year.
See: *Aquatic Plant Management Plan, West Otter Lake, Steuben County, Indiana* (Aquatic Enhancement & Survey, Inc. 2005)

5.0 Problem Statement

There have been no significant changes in the current year.
See: *Aquatic Plant Management Plan, West Otter Lake, Steuben County, Indiana* (Aquatic Enhancement & Survey, Inc. 2005)

6.0 Vegetation Management Goals and Objectives

There have been no significant changes in the current year.
See: *Aquatic Plant Management Plan, West Otter Lake, Steuben County, Indiana* (Aquatic Enhancement & Survey, Inc. 2005)

7.0 Plant Management History, 2006 Season Management Actions

Eurasian watermilfoil was targeted for treatment on a lake-wide basis on West Otter Lake in 2006. Patterns of colonization of this invasive plant vary, but often Eurasian watermilfoil forms dense colonies that excluded or nearly exclude the growth of other plants by forming light-blocking overgrowth early in the season before native plant propogules spring into action. In West Otter Lake Eurasian watermilfoil tends to densely colonize limited areas of the lake. Fifteen acres of littoral zone were selected for treatment based on the presence of significant Eurasian watermilfoil. On May 15, 2006 during windy conditions (NNW 18-25mph) 1500 pounds of 2-4-D were applied to these areas (see figure 1). The water temperature was 15.6 degrees C. A section of shoreline at the south end of the lake was also treated with Aquathol K contact herbicide to control Curlyleaf pondweed on May 31, 2006. The air temperature was 78 degrees with a light southwest wind. The water temperature was not measured. Both treatments were consistent with the West Otter Lake Plant Management Plan. Both treatments had good results with little regrowth evident during the post treatment surveys. Residents did indicate milfoil regrowth occurred after the August plant surveys. This was an improvement over the 2005 season when regrowth was dense in some areas well before the end of the season.

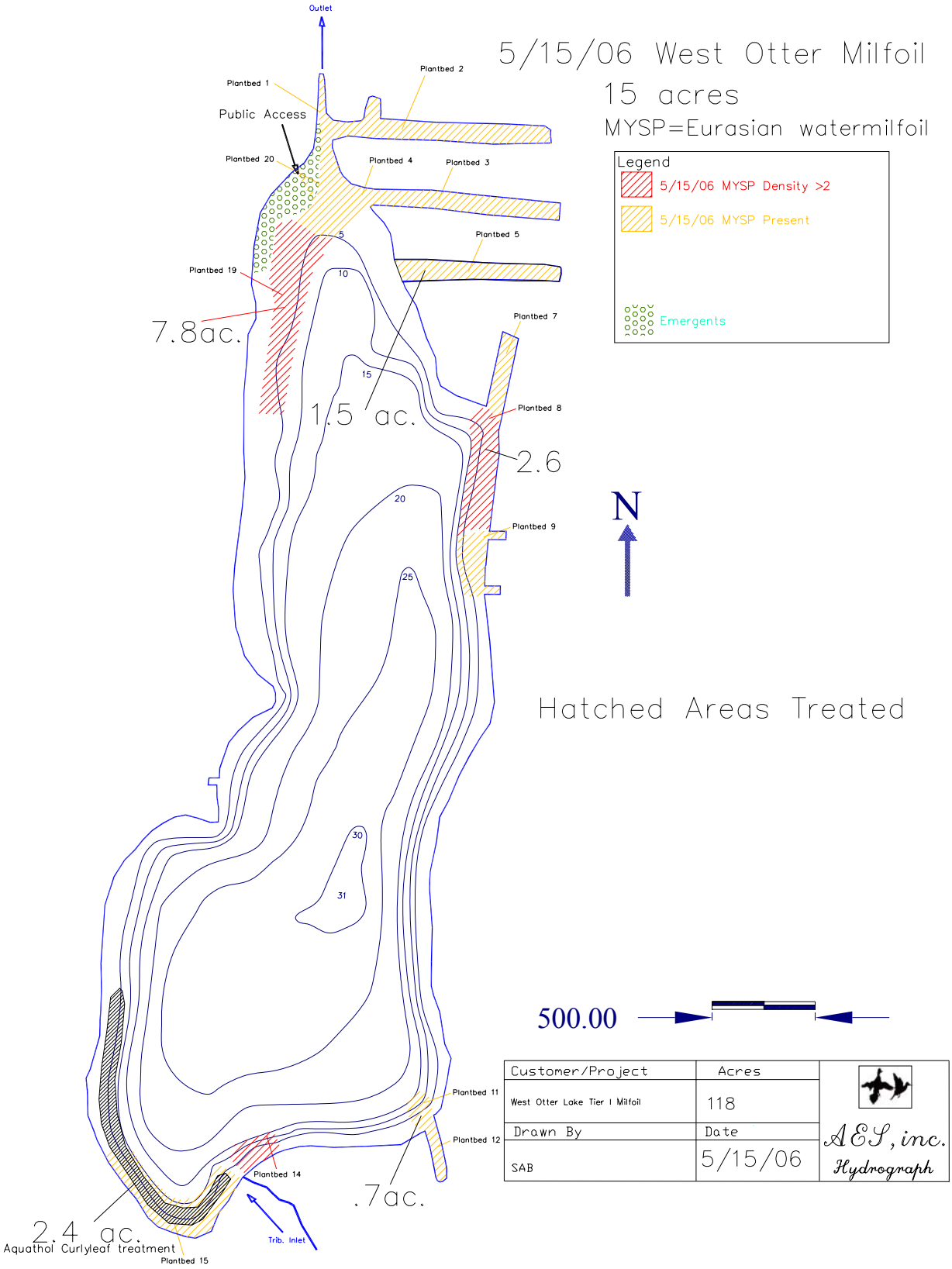


Figure 1 2006 West Otter Treatment areas

8.0 Aquatic Plant Community Characterization

8.1 Methods

Plant sampling in 2006 included a Tier I survey on 5/15/06 and again on 8/4/06 utilizing the same sampling protocol as in the original Plant Management Plan. For details see: *Aquatic Plant Management Plan, West Otter Lake, Steuben County, Indiana* (Aquatic Enhancement & Survey, Inc. 2005) A single Tier II survey was performed on 8/14/06. The tier II protocol was modified over the original protocol used in the Plant Management Plan by redesignating rake-toss sampling effort according to lake trophic status (mesotrophic for West Otter) combined with lake size (118 acres) rather than lake size alone. In addition, sampling was performed in a depth-stratified manner with a specified number of samples collected in depth contour categories according to the following table:

		Hypereutrophic		Eutrophic			Mesotrophic				Oligotrophic				
Lake Acres	Total # of Sites	0-5 foot contour	5-10 foot contour	0-5 foot contour	5-10 foot contour	10-15 foot contour	0-5 foot contour	5-10 foot contour	10-15 foot contour	15-20 foot contour	0-5 foot contour	5-10 foot contour	10-15 foot contour	15-20 foot contour	20-25 foot contour
<10	20	10	10	10	7	3	10	5	3	2	10	4	3	2	1
10-49	30	20	10	10	10	10	10	10	7	3	10	10	5	3	2
50-99	40	30	10	17	13	10	10	10	10	10	10	10	10	7	3
100-199	50	40	10	23	17	10	14	14	12	10	10	10	10	10	10
200-299	60	50	10	30	20	10	18	16	16	10	14	12	12	12	10
300-399	70	60	10	37	23	10	22	20	18	10	17	15	14	14	10
400-499	80	70	10	43	27	10	25	23	22	10	19	18	17	16	10
500-799	90	80	10	50	30	10	29	27	24	10	22	21	19	18	10
>=800	100	90	10	57	33	10	33	31	26	10	25	23	22	20	10

Table 1 Tier II Sample size requirements as determined by lake size, trophic state, and apportioned by depth class (source IDNR)

8.2 Results

8.2.1 Tier I

For the May 15 and August 4 Tier I plant surveys 20 areas of West Otter Lake's littoral zone were designated as Plantbeds based on their relative homogeneity of biological and physical characteristics. (See figure 2) These same plantbed boundaries were also utilized in a second Tier I survey on August 4. Substrate, size, and submersed plant species abundance data for the two surveys is displayed in tables 3 and 4 below. Table 2 below contains the complete list of species collected from West Otter Lake to date. No voucher specimens were collected from West Otter Lake during the 2006 season surveys. A short description of each plantbed is provided below.

Plantbed 1. Plantbed one is essentially the lake's outlet channel. It is .39 acres in size. Its substrate is sand with silt. Five species of submersed plant were present during the May survey and three species during the August survey. Algae was also present during both. This plantbed contained Eurasian watermilfoil during both surveys.

Plantbed 2. This plantbed is a silt-with-sand bottomed excavated channel 2.41 acres in size. A large amount of organic sediments is present. During May seven submersed

plant species were noted here. In August six were noted. Eurasian milfoil was present in May but had not returned after the treatment of this area. Algae was present during both surveys.

Plantbed 3. This plantbed is also an excavated channel with a silt-with-sand bottom. It is 1.81 acres in size and contains a large amount of organic sediment. This channel is quite shallow and barely navigable in the summer months. It is dominated by Elodea. Five species were present during the May survey with five present during August. Algae was also present during May. Some Eurasian watermilfoil was noted during both surveys.

Plantbed 4. Plantbed four is a .24 acre area near the mouth of plantbed 3. It has a silt-with-sand bottom. Eight plant species were present during May and nine were present during August. Eurasian watermilfoil was present during both surveys.

Plantbed 5. Plantbed five is a 1.57 acre excavated channel. It has a silt and sand bottom with a large amount of organic sediments present. Four plant species were noted during May and nine were noted during August. Eurasian watermilfoil was present during both surveys.

Plantbed 6. Plantbed six is a 1.28 acre shoreline area. It has a silt and sand bottom. Three submersed aquatic plant species were noted in this area in May and four in August. Eurasian watermilfoil was not present.

Plantbed 7. Plantbed seven is a .72 acre excavated channel. It has a silt and sand bottom. Ten plant species were noted in this plantbed in May and seven in August. Eurasian watermilfoil was noted during both surveys. During May this plantbed was dominated by Variable watermilfoil.

Plantbed 8. Plantbed eight is a 1.89 acre shoreline area. It has a silt and sand bottom. Seven submersed plant species were noted in this plantbed during May while only three were noted during August. Eurasian milfoil was only noted during May.

Plantbed 9. Plantbed nine is a 1.68 acre shoreline area and also includes a small excavated channel. It has a silt and sand bottom. Six submersed plant species were noted in this plantbed in May and five were noted in August. Eurasian watermilfoil was only noted during August.

Plantbed 10. Plantbed 10 is a small (.33 acre) silt and sand bottomed shoreline area. Only two plant species were noted in plantbed ten during each survey. Eurasian watermilfoil was only noted during May.

Plantbed 11. Plantbed 11 is a .4 acre area outside the mouth of a small excavated channel. It has a silt and sand bottom. Seven submersed plant species were noted in this plantbed in May and four in August. Eurasian watermilfoil was noted only in May and apparently did not return after treatment.

Plantbed 12. Plantbed 12 is a .41 acre excavated channel. It has a silt and sand bottom with organic sediment present. Six species of submersed aquatic plant were present in May and four in August. Eurasian milfoil was present during both surveys.

Plantbed 13. Plantbed 13 is a 1.07 acre shoreline area. It has a silt and sand bottom. Four species of submersed plant were present in this area in May and five in August. Eurasian watermilfoil was only present during August.

Plantbed 14. Plantbed 14 is a .65 acre shoreline area adjacent to he lakes tributary inlet. It has a silt and sand bottom. Four plant species were present during the May survey, including Eurasian watermilfoil. Three species were present during August. Eurasian watermilfoil did not appear to have returned to this area after treatment.

Plantbed 15. Plantbed 15 is a long (4.27 acre shoreline area). It has a silt and sand bottom. Being near the lake's tributary inlet it is typically a problem area for excessive plant growth. Eight submersed plant species were present during the May survey including Eurasian watermilfoil. Six were present in August. Eurasian watermilfoil was not noted in August and apparently did not return after treatment.

Plantbed 16. Plantbed 16 is a long (5.25 acre) shoreline area. It has a silt and sand bottom. Four plant species were present in this area during May while ten were present during August. Eurasian watermilfoil was only found in this area during August.

Plantbed 17. Plantbed 17 is a 2.10 acre shoreline area and also includes a small excavated channel. It has a silt and sand bottom. Five submersed species were noted in this plantbed in May and three in August. Eurasian watermilfoil was not observed in this plantbed during the Tier I surveys.

Plantbed 18. Plantbed 18 is a 6.28 acre shoreline area. It has a silt and sand bottom. Six species were noted in this plantbed in May and Eight in August. Eurasian watermilfoil was only noted during the August survey.

Plantbed 19. Plantbed 19 8.38 acres in size and includes a shoreline area and offshore flat. It has a silt and sand bottom. This area has exhibited thick Eurasian watermilfoil growth in the past. Five submersed plant species were noted in this plantbed in May and three in August. Eurasian watermilfoil declined from a visual abundance score of three in the May survey to a score of one in August. Presumably in response to treatment.

Plantbed 20. Plantbed 20 includes the 2.46 acres in front of the IDNR public access site. It has a silt and sand bottom and is traditionally the worst area in terms of dense Eurasian watermilfoil growth. Seven submersed plant species were observed in this plantbed in May while Eight were noted in August. Eurasian milfoil abundance declined in response to treatment from a score of two in May to a score of one during the August survey.

Table 2 Common, scientific names, and species codes for submersed plants collected from West Otter Lake since 2004.

Common Name(s)	Scientific Name	Species Code	Nativity Native/Introduced	Indiana Status (Rare/Threatened/Endangered)
Variable watermilfoil	*Myriophyllum heterophyllum*	MYHE	N	
Variable pondweed	*Potamogeton gramineus*	POGR	N	
Chara, Muskgrass, Stonewort	*Chara* sp.	CH?AR	N	
Flatstem pondweed	*Potamogeton zosteriformis*	POZO	N	
Whitestem pondweed	*Potamogeton praelongus*	POPR5	N	Threatened
Eurasian watermilfoil	*Myriophyllum spicatum*	*MYSP2	I	
Richardson's pondweed	*Potamogeton richardsonii*	PORI	N	Rare
Illinois pondweed	*Potamogeton illinoensis*	POIL	N	
Curlyleaf pondweed	*Potamogeton crispus*	*POCR3	I	
Sago pondweed	*Potamogeton pectinatus*	POPE6	N	
Elodea, Common waterweed	*Elodea canidensis*	ELCA	N	
Horned pondweed	*Zannichellia palustris*	ZAPA	N	
Largeleaf pondweed	*Potamogeton amplifolius*	POAM	N	
Red-veined pondweed	*Potamogeton X undulates Wolfg*	POUN	Hybrid of Introduced & Native species	Only known N. American Occurrence. (found in 2005 only)
Small pondweed	*Potamogeton pusillus*	POPU	N	
Coontail	*Ceratophyllum demersum*	CEDE	N	
Great bladderwort, Common bladderwort	*Utricularia vulgaris*	UTMA	N	
Floatingleaf pondweed	*Potamogeton natans*	PONA	N	
Water stargrass	*Zosterella dubia, Heteranthera dubia*	ZODU/HEDU	N	
Needle rush (submersed)	*Eleocharis acicularis*	ELAC	N	
Filamentous algae	Any species	ALGA	N	
Southern naiad	*Najas guadalupensis*	NAGU	N	
Common naiad, Slender naiad	*Najas flexilis*	NAFL	N	
Spiny naiad	*Najas marina*	NAMA		

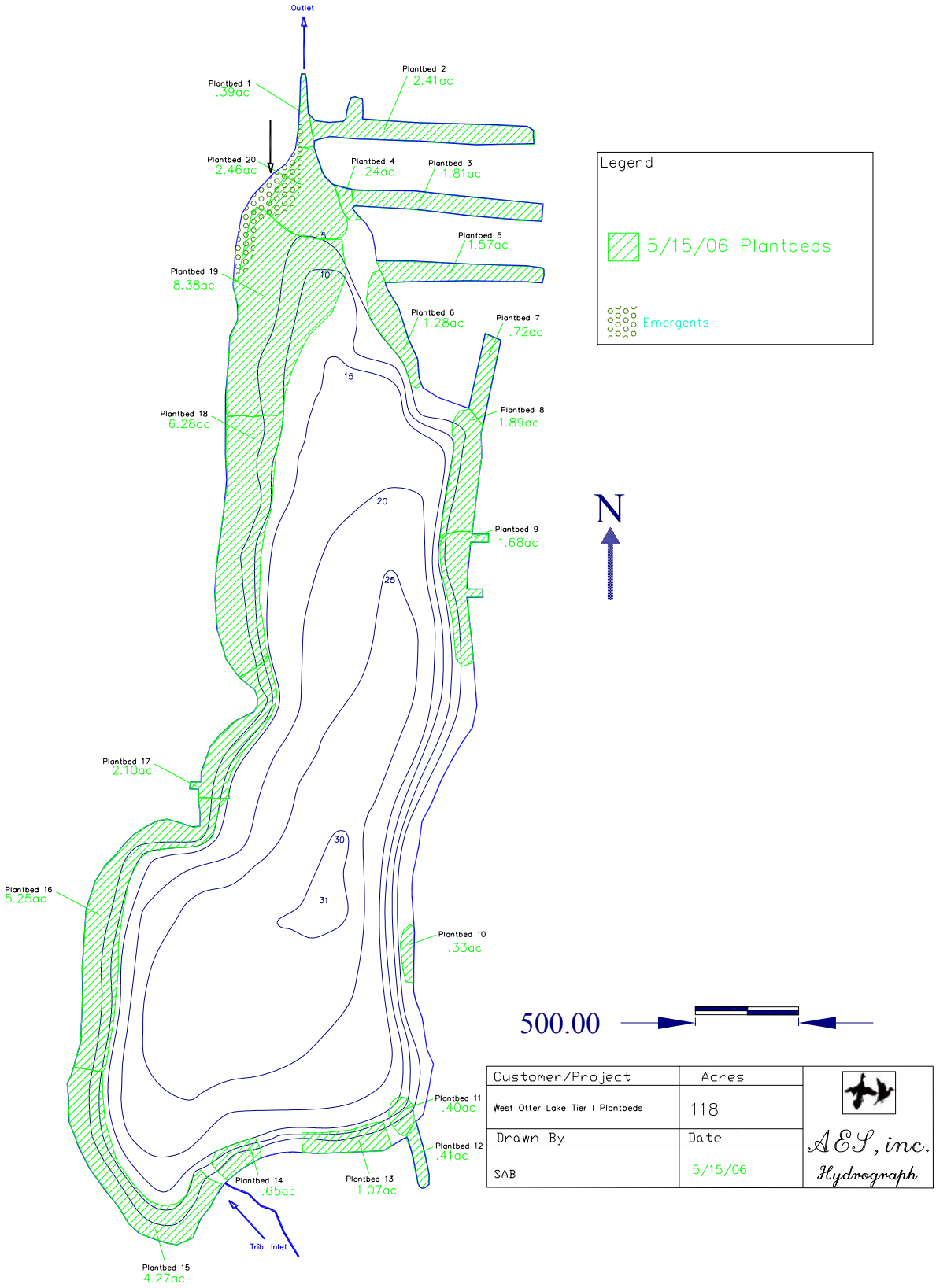


Figure 2 2006 Tier I Plantbeds for West Otter Lake

Scores are assigned according to the following table:
Species Abundance or Canopy
1=< 2%
2= 2-20%
3= 21-60%
4=> 60%

5/15/06 Tier I sampling results: (submersed plants) Abundances

Plantbed	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	
Size (Acres)	.39	2.41	1.81	.24	1.57	1.28	.17	1.89	1.68	.33	.40	.41	1.07	.65	4.27	5.25	2.10	6
Substrate	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
Marl Present?																		
High Organic in Sediments?		1	1		1		1					1						
S **Canopy**	2																	
N **Canopy**																		
F **Canopy**																		
E **Canopy**		1	1	1		1	1	1		3			1		1			
Plant Species																		
Chara *Chara sp.*		3	1	3	1			2	3	1	3	4		3	2	3	4	
• Eurasian watermilfoil *Myriophyllum spicatum*	2	2	1	2	1		2	3		2	2	2		3	2			
Variable watermilfoil, *Myriophyllum heterophyllum*		2	1	2	1	1	4	2	3		2	2	1	1	2	2	3	
Illinois pondweed *Potamogeton illinoensis*						1	2	1	2		2		1		1	1	2	
• Curly-leaf pondweed *Potamogeton crispus*	4	3		2	4	2	3	3	2		2	1	1	3	2	1	2	
Algae	2	2	1				2								1			
*Whitestem pondweed *Potamogeton praelongus*				2				3	1		1		2					
Great bladderwort *Utricularia vulgaris*	1																	
Slender naiad *Najas flexilis*							2											
Sago pondweed *Stuckenia pectinata*	2						2											
Elodea, *Elodea canadensis*	2	2	4	3			2				2				2			
Flatstem pondweed *Potamogeton zosteriformus*		2	2	2			2				1	1	1		1		1	
Large-leaved pondweed *Potamogeton amplifolius*																		
Spiny naiad *Najas marina*																		
Variable pondweed *Potamogeton gramineus*																		
Eelgrass/Tapegrass *Vallisneria americana*																		
Coontail *Ceratophyllum echinatum*		2		1			2					1			1			
Horned pondweed *Zannichellia palustris*							2	2										
Needle Rush									2									

Table 3 5/15/06 Tier I plant survey data for West Otter Lake

• Non-native *RTE species

Scores are assigned according to the following table:
Species Abundance or Canopy
1=< 2%
2= 2-20%

3= 21-60%
4=> 60%

Tier I sampling results: (submersed plants) Abundances

Plantbed	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Size (Acres)	.39	2.41	1.81	.24	1.57	1.28	.17	1.89	1.68	.33	.40	.41	1.07	.65	4.27	5.25	2.10	6.28	8.38
Substrate	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Marl Present?										1	1		1	1	1		1	1	
High Organic in Sediments?		1	1		1		1					1							
S **Canopy**	2				1		1										1		
N **Canopy**																			
F **Canopy**																			
E **Canopy**	3		1	1	2	1	1	2	1	3			2	1	1	1	3	3	3
Plant Species																			
Chara *Chara sp.*		2		3	2	2	1	2		3	3	4	2	2	2	3	3	3	2
• Eurasian watermilfoil *Myriophyllum spicatum*	2		1	1	3		1		1		2	2				1		1	1
Variable watermilfoil, *Myriophyllum heterophyllum*					2	2			2				1			2	2	1	
Illinois pondweed *Potamogeton illinoensis*							1					1	1					1	
• Curly-leaf pondweed *Potamogeton crispus*		1	1		1											1			
Algae	2	3			3		2								1	1		1	
*Whitestem pondweed *Potamogeton praelongus*					1														
Great bladderwort *Utricularia vulgaris*		2		1	3		2											1	
Slender naiad *Najas flexilis*			3	3	3	2	2				1				2	1		2	
Sago pondweed *Stuckenia pectinata*		1		3		2		1	3	2	3	2	2	2	2	2	2	2	2
Elodea, *Elodea canadensis*	2	3	4	2	2		1				1				1				
Flatstem pondweed *Potamogeton zosteriformus*																			
Large-leaved pondweed *Potamogeton amplifolius*																			
Spiny naiad *Najas marina*									1										
Variable pondweed *Potamogeton gramineus*				1				2	1				1			1			
Eelgrass/Tapegrass *Vallisneria americana*																			
Coontail *Ceratophyllum echinatum*	3	3	2	2	3		3							2	2	2			
Horned pondweed *Zannichellia palustris*																			
Needle Rush																			
Richardson's pondweed *Potamogeton richardsonii*				2															
Water stargrass *Heteranthera dubia*															1	2		3	
Small pondweed *Potamogeton pusillus*																1			

Table 4 8/4/06 Tier I Plant data for West Otter Lake • Non-native *RTE species

Descriptor	**Post-Treatment West Otter Lake 8/30/04**	**Pre-treatment West Otter Lake 5/31/05**	**Post-Treatment West Otter Lake 8/19/05**	**Post-Treatment West Otter Lake 8/4/06**	range for 21 other Indiana lakes	mean for 21 other Indiana lakes
# Sampling sites	59	61	59	**50**		
Total number of	12	12	12	**11**	1 to 17	8

species						
Total number of native species	10	10	9	**9**	1 to 16	7
Mean number of species per site	1.73	1.26	1.93	**1.22**	.38 to 2.66	1.61
Species diversity index (SDI), 0-1 scale,	.88	0.87	0.88	**.86**	0.0 to .91	0.66
Aquatic Vegetation % Frequency of Occurrence	93.2	60.66	96.61	**64**	n/d	n/d
Mean rake density	3	1.56	3	**n/d**	1.8 to 4.7	3.3

Table 5 2004, 2005 and 2006 Tier II Data for West Otter Lake

8.2.2 Tier II

Tier II plant sampling was conducted on August 4th, 2006. Rake tosses were performed at 50 random stratified sampling sites per INDR Tier II Protocol.(IDNR 2006) Sampling site coordinates were recorded on a WAAS enabled hand-held GPS unit, converted to Autocad® coordinates, and mapped on a contour map of West Otter Lake. (Figure 3) Statistical plant community descriptors for the 2005 and 2006 seasons are listed in the table above. (Table 5) These descriptors were based on the descriptor set from (Pearson 2004). For comparison, the range and mean of descriptors from a set of 21 other Indiana lakes (Pearson 2004) are listed in the table. Maps showing rake scores and collection locations for the three most abundant species; Chara, Slender naiad, and Variable pondweed are also provided. (Figures 4, 5, 6 respectively) Plant growth occurred to a depth of 14 feet in 2006, 16 feet 2005, and 11 feet in 2004 so sampling to the 20 foot contour was reasonably well suited to the conditions at West Otter.

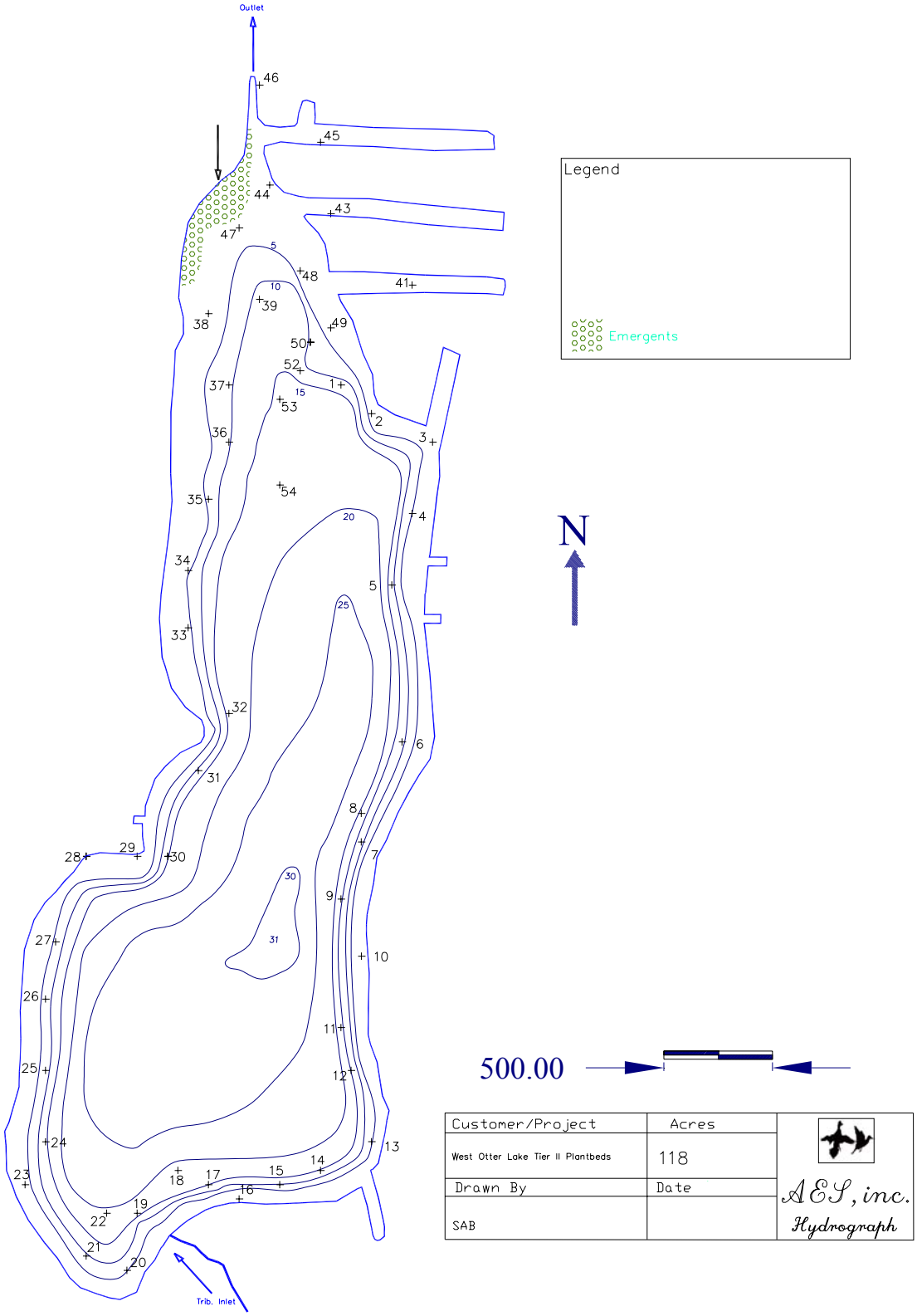


Figure 3 8/06 Tier II sampling points

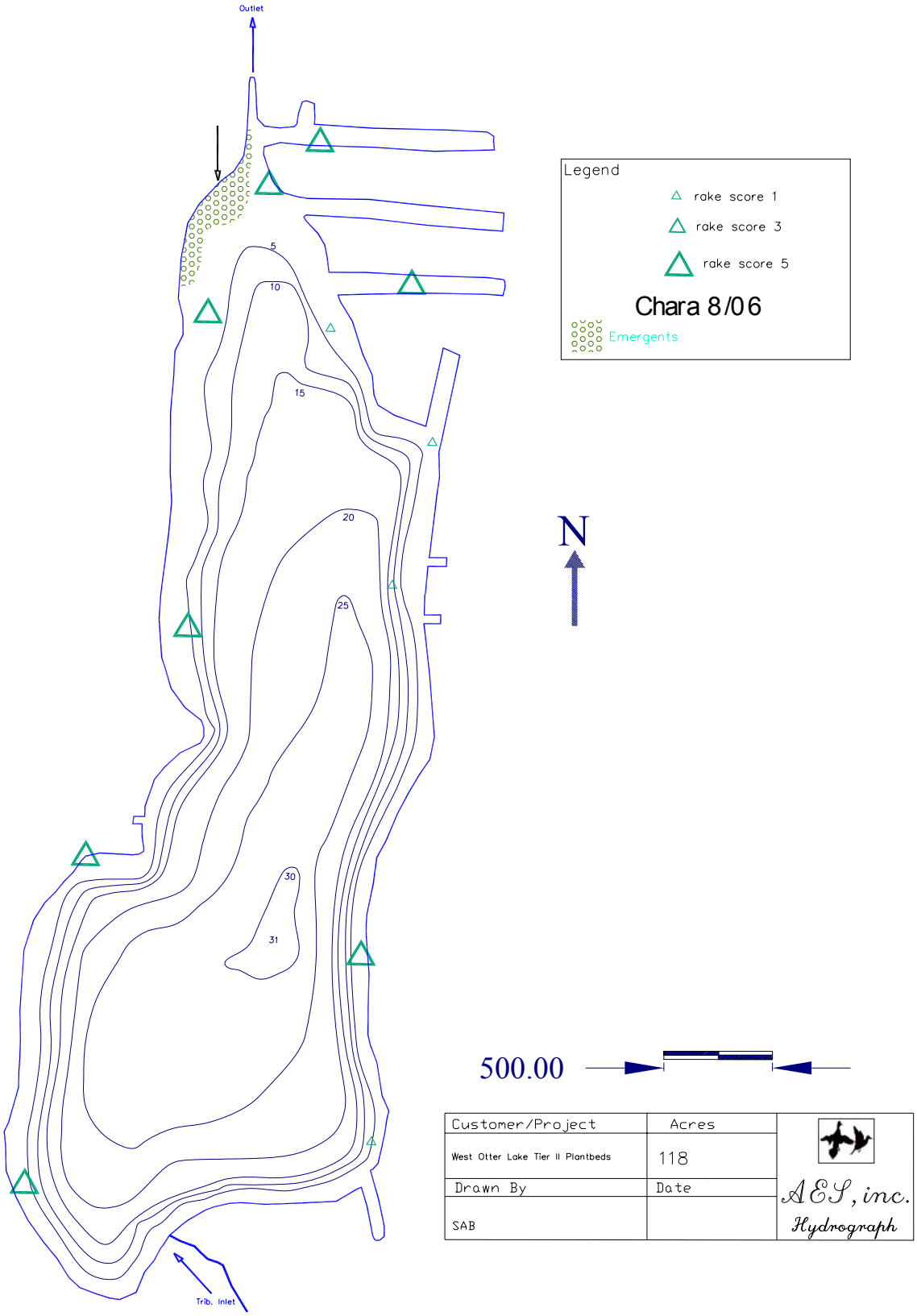


Figure 4 8/06 Tier II Chara Map

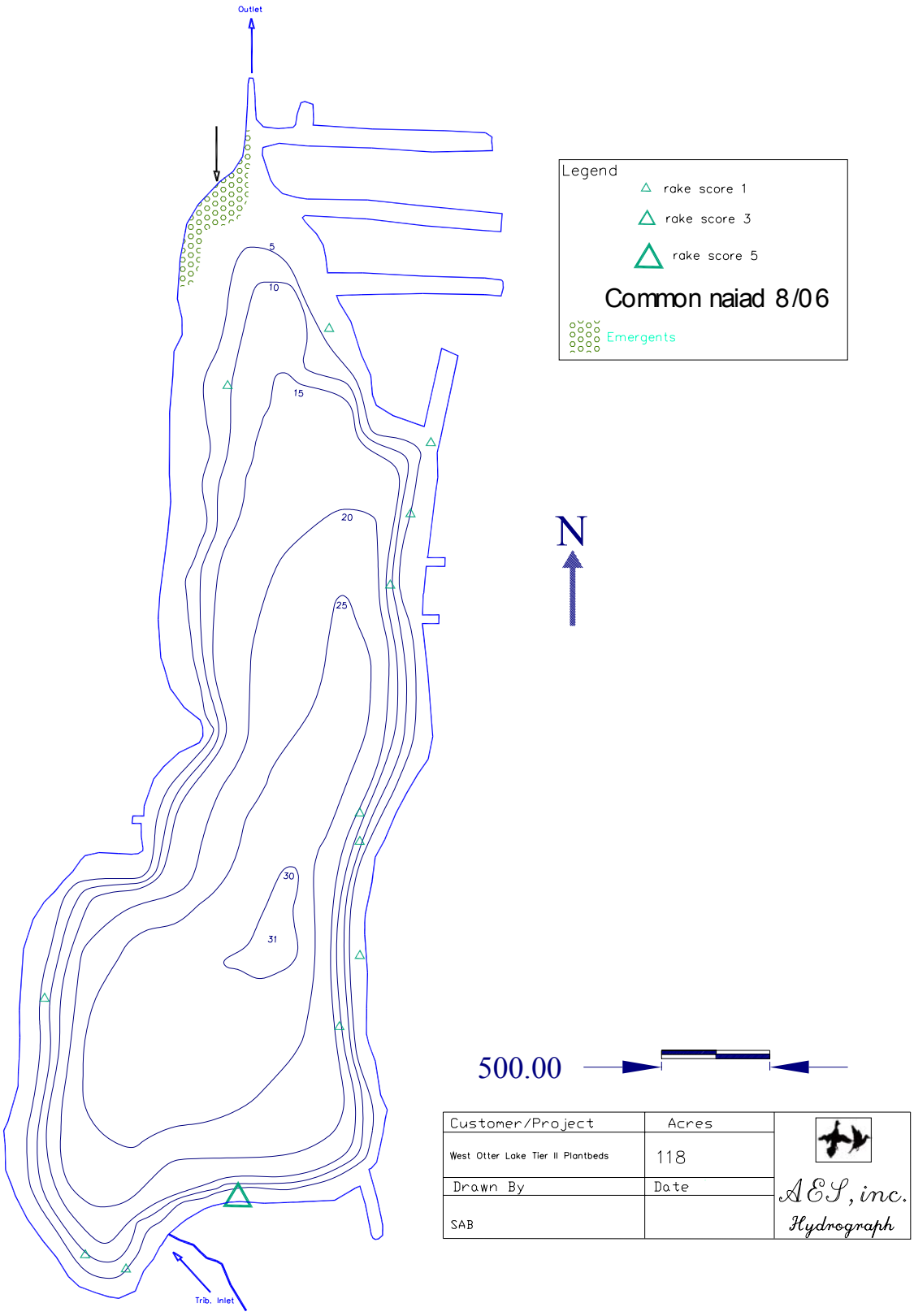


Figure 5 8/06 Tier II Slender naiad map

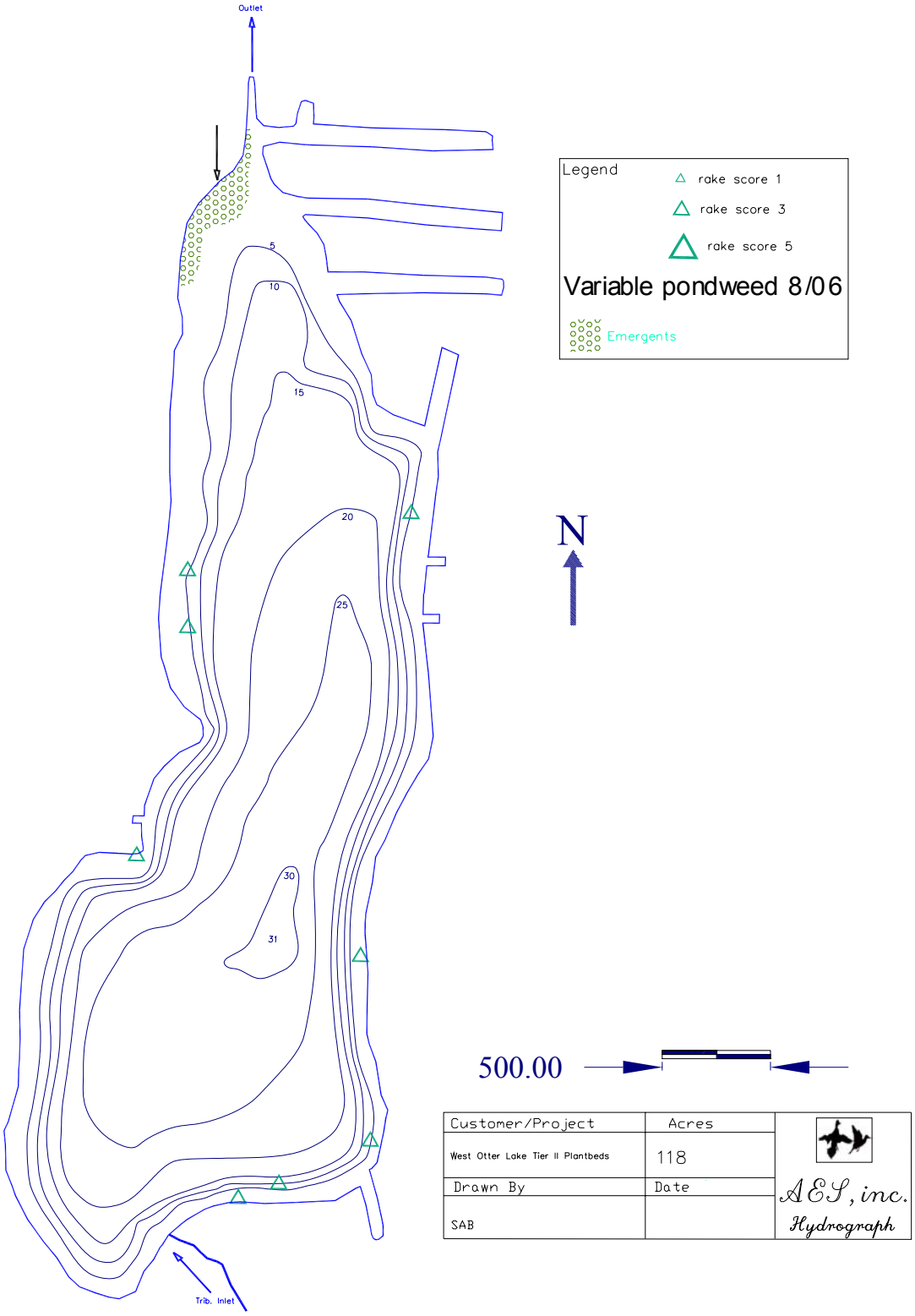


Figure 6 8/06 Variable pondweed map

Species Codes		occurrence (# of sites)	% of sites	mean density	relative density
CH,	Chara	13	26.00%	3.6	0.94
MYSP	Eurasian watermilfoil	1	2.00%	1	0.02
POIL	Illinois pondweed	2	4.00%	2	0.08
CEDE	Coontail	8	16.00%	2.5	0.4
MYHE	Variable watermilfoil	5	10.00%	3	0.3
UTMA	Great bladderwort	1	2.00%	1	0.02
NAFL	Slender naiad (common naiad)	13	26.00%	1.3	0.34
NAMA	Spiny naiad	2	4.00%	1	0.04
ELCA	Elodea	5	10.00%	3	0.3
POPE	Sago pondweed	3	6.00%	1.7	0.1
POGR	Variable pondweed	8	16.00%	1.5	0.24

Table 6 Species specific Tier II data for West Otter Lake 8/06

8.3 Macrophyte Inventory Discussion

West Otter Lake is above average in terms of species diversity when compared with other Indiana lakes. Eleven species were collected in 2006 compared to a mean of 8 for the set of 21 lakes and a maximum of 17. Nine native species were collected compared to an average of seven and maximum of 16 for the set of 21 lakes. The mean number of species-per-site however was only 1.22 compared to a 21 lake mean of 1.61 and 21 lake maximum of 2.66. The species diversity index score for the 8/06 sampling was .86 compared to a 21 lake mean of .66 and a 21 lake maximum of .91. Vegetation was recovered at 64% of all sampling sites. Chara and Slender naiad were the most abundant plants, both being collected at 26% of sampling sites. Coontail and Variable pondweed were second most abundant, both being collected at 16% of sampling sites. Eurasian watermilfoil was only present at 2% of sampling sites. Overall post-treatment West Otter Lake Exhibited a solidly native beneficial plant community in 2006. This is of benefit to the lake in terms of both recreational viability and wildlife habitat. Continuing a program of Eurasian watermilfoil control should be beneficial in maintaining this status. Keeping the occurrence of Eurasian watermilfoil at or below 5% of sampling sites (under the current Tier II protocol) is probably a reasonable goal for West Otter Lake's control program in 2007 if a two-treatment regime is incorporated. If only one treatment is used this may be exceeded. A nearly identical 2, 4-D treatment in the previous year (2005) only held the August occurrence to eight percent, but the 2005 sampling regime probably led to a slightly higher occurrence in that year.

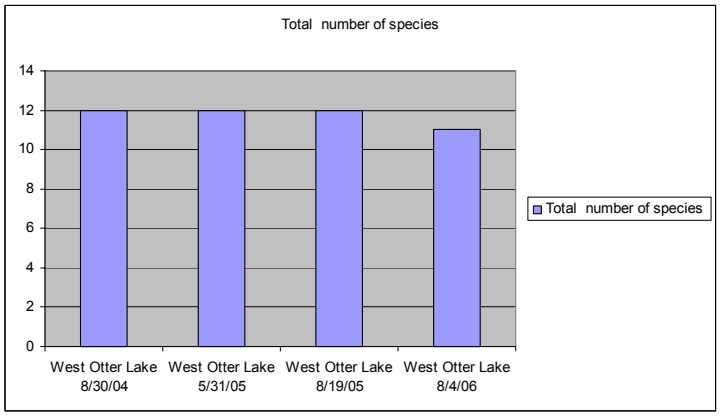


Figure 7 Tier II total number of species 2004-2006

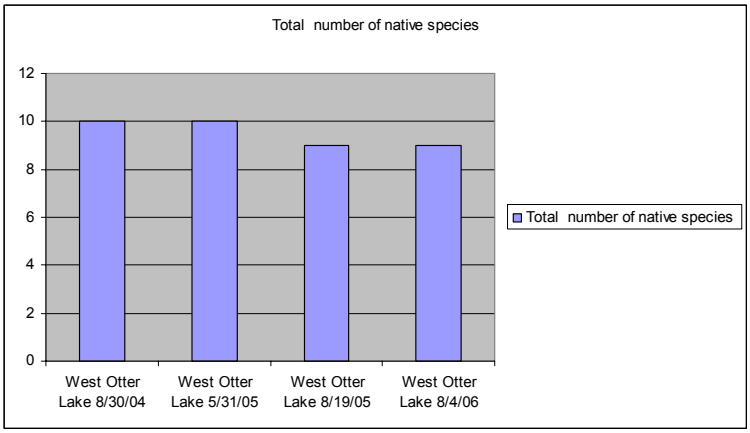


Figure 8 Tier II number of native species 2004-2006

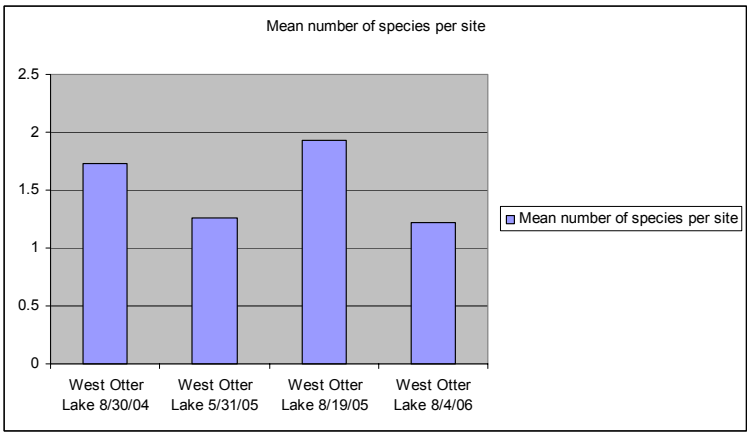


Figure 9 Tier II mean number of species per site 2004-2006

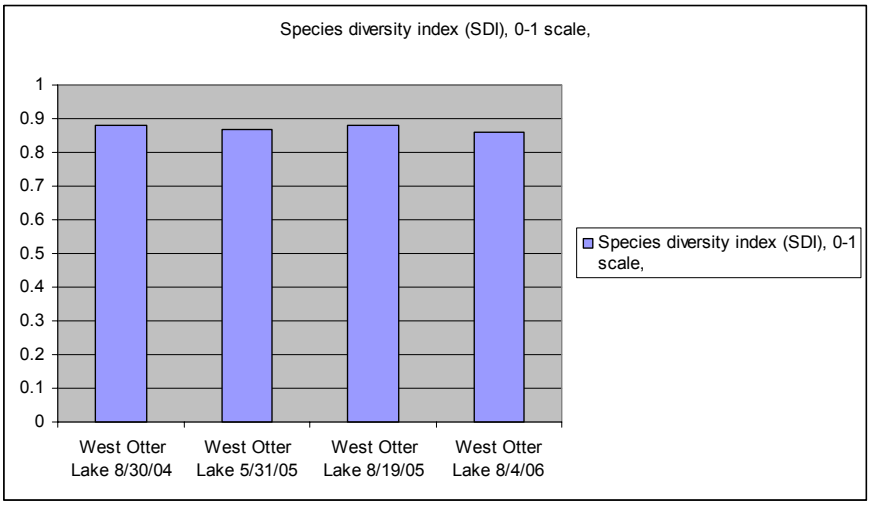


Figure 10 Species diversity index 2004-2006

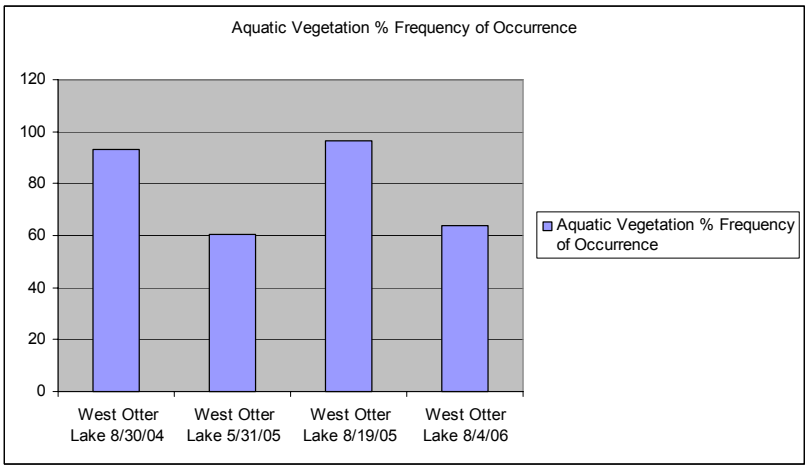


Figure 11 Aquatic vegetation % frequency of occurrence 2004-2006

Table 7 Frequency of occurence by species 2004-2006

Plant species frequency of occurrence	August 2004	May 2005	August 2005	August 2006
Variable watermilfoil	20%	15%	10%	10%
Variable pondweed				16%
Chara, Muskgrass, Stonewort	27%	28%	44%	26%
Flatstem pondweed				
Whitestem pondweed		5%		
Eurasian watermilfoil	**15%**	**7%**	**8%**	**2%**
Richardson's pondweed				
Illinois pondweed	17%	5%	19%	4%
Curlyleaf pondweed		**23%**	**8%**	
Sago pondweed		11%	22%	6%
Elodea, Common waterweed	14%	8%	3%	10%
Horned pondweed		5%		
Largeleaf pondweed				
Red-veined pondweed				
Small pondweed			15%	
Coontail	31%	11%	10%	16%
Great bladderwort, Common bladderwort	2%	2%	5%	2%
Floatingleaf pondweed				
Water stargrass				
Needle rush (submersed)				
Filamentous algae	17%			
Southern naiad	5%			
Common naiad, Slender naiad	5%	7%	22%	26%
Spiny naiad	3%			4%

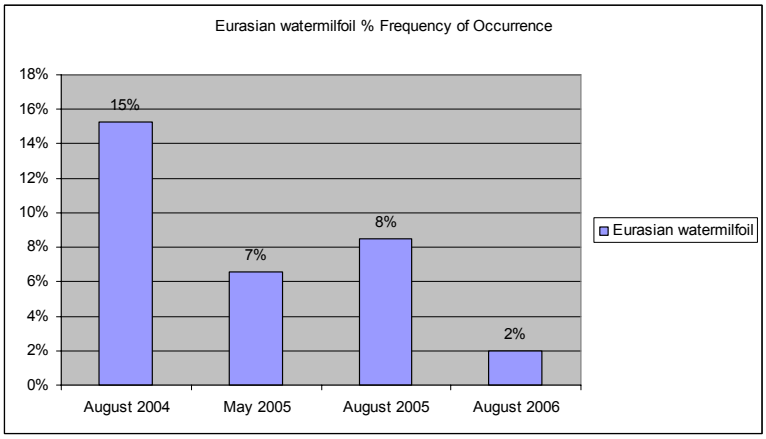


Figure 12 Eurasian watermilfoil frequency of occurrence 2004-2006

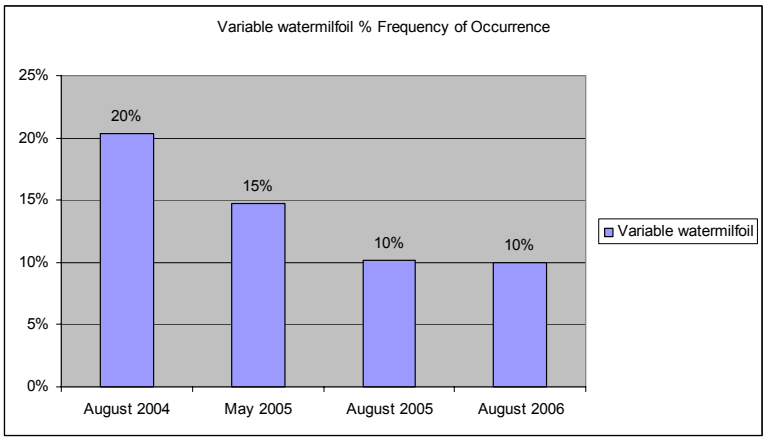


Figure 13 Variable watermilfoil frequency of occurrence 2004-2006

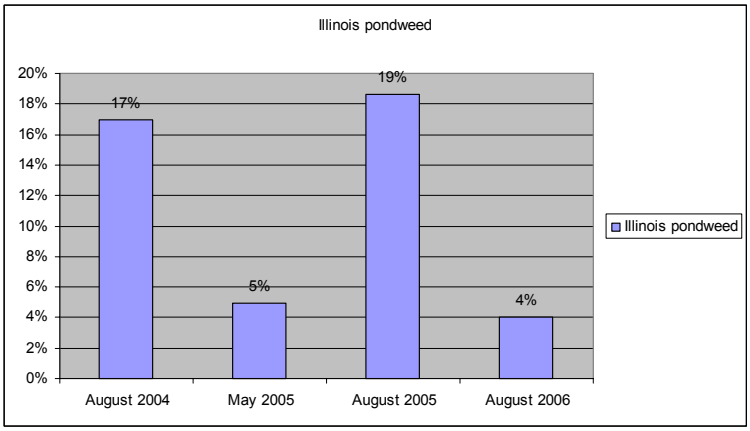


Figure 14 Illinois pondweed frequency of occurrence 2004-2006

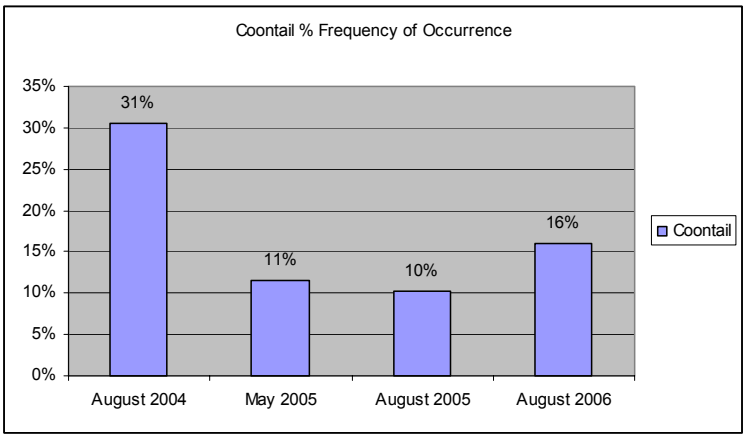


Figure 15 Coontail frequency of occurrence 2004-2006

West Otter Lake 8/14/06	Contour (ft)
	0-5.9

(submersed species only, fil. algae excluded)

Descriptor	
Sampling sites	14
Total number of species	9
Total number of native species	9
Mean number of species per site	2.29
Species diversity index (SDI), 0-1 scale,	0.82
Aquatic Vegetation % Frequency of Occurrence	100.00

Table 8 Plant community descriptors for the 0-5.9 foot contour

Depth Contour (ft) 0-5.9

Common Name(s)	# sites	% sites	mean density	relative density
Eurasian watermilfoil				
Variable pondweed	5	35.71	1.40	0.50
Chara	9	64.29	3.89	2.50
Flatstem pondweed				
Whitestem pondweed				
Vallisneria, Tapegrass				
Illinois pondweed	1	7.14	3.00	0.21
Curlyleaf pondweed				
Sago pondweed	2	14.29	2.00	0.29
Elodea, Common waterweed	3	21.43	3.67	0.79
Horned pondweed				
Largeleaf pondweed				
Variable watermilfoil	1	7.14	1.00	0.07
Small pondweed				
Robbins pondweed				
Coontail	3	21.43	2.33	0.50
Great bladderwort				
Floatingleaf pondweed				
Water stargrass				
Common Duckweed				
Needle rush (submersed)				
Arrowhead (submersed)				
Filamentous algae				
White water buttercup				
Common naiad	7	50.00	1.57	0.79
Spiny naiad	1	7.14	1.00	0.07

Table 9 Species descriptors for the 0-5.9 foot contour

West Otter Lake 8/14/06	Contour (ft)
	6-10.9

(submersed species only, fil. algae excluded)

Descriptor	
Sampling sites	14
Total number of species	11
Total number of native species	10
Mean number of species per site	1.43
Species diversity index (SDI), 0-1 scale,	0.88
Aquatic Vegetation % Frequency of Occurrence	78.57

Table 10 Plant community descriptors for the 6-10.9 foot contour

Depth Contour (ft) 6-10.9

Common Name(s)	# sites	% sites	mean density	relative density
Eurasian watermilfoil	1	7.14	1.00	0.07
Variable pondweed	3	21.43	1.67	0.36
Chara	3	21.43	3.67	0.79
Flatstem pondweed				
Whitestem pondweed				
Vallisneria, Tapegrass				
Illinois pondweed	1	7.14	1.00	0.07
Curlyleaf pondweed				
Sago pondweed	1	7.14	1.00	0.07
Elodea, Common waterweed	1	7.14	3.00	0.21
Horned pondweed				
Largeleaf pondweed				
Variable watermilfoil	1	7.14	5.00	0.36
Small pondweed				
Robbins pondweed				
Coontail	3	21.43	2.33	0.50
Great bladderwort	1	7.14	1.00	0.07
Floatingleaf pondweed				
Water stargrass				
Common Duckweed				
Needle rush (submersed)				
Arrowhead (submersed)				
Filamentous algae				
White water buttercup				
Common naiad	4	28.57	1.00	0.29
Spiny naiad	1	7.14	1.00	0.07

Table 11 Species descriptors for the 6-10.9 foot contour

West Otter Lake 8/14/06	Contour (ft)
	11-15.9

(submersed species only, fil. algae excluded)

Descriptor	
Sampling sites	12
Total number of species	11
Total number of native species	9
Mean number of species per site	0.75
Species diversity index (SDI), 0-1 scale,	0.77
Aquatic Vegetation % Frequency of Occurance	58.33

Table 12 Plant community descriptors for the 11-15.9 foot contour

Depth Contour (ft)	11-15.9

Common Name(s)	# sites	% sites	mean density	relative density
Eurasian watermilfoil				
Variable pondweed				
Chara	1	8.33	1.00	0.08
Flatstem pondweed				
Whitestem pondweed				
Vallisneria, Tapegrass				
Illinois pondweed				
Curlyleaf pondweed				
Sago pondweed				
Elodea, Common waterweed	1	8.33	1.00	0.08
Horned pondweed				
Largeleaf pondweed				
Variable watermilfoil	3	25.00	3.00	0.75
Small pondweed				
Robbins pondweed				
Coontail	2	16.67	3.00	0.50
Great bladderwort				
Floatingleaf pondweed				
Water stargrass				
Common Duckweed				
Needle rush (submersed)				
Arrowhead (submersed)				
Filamentous algae				
White water buttercup				
Common naiad	2	16.67	1.00	0.17
Spiny naiad				

Table 13 Species descriptors for the 11-15.9 foot contour

9.0 Aquatic Vegetation Management Alternatives

No new applicable plant management alternatives are available at this time. New alternative selective herbicides may be released to the market and prove efficacious in the near future and will be evaluated for use on West Otter Lake at that time.

10.0 Public Involvement

Two public meetings for discussion of plant management at West Otter Lake were incorporated into regular association meetings. These took place on 6/3/06 and 9/16/06. Information was presented by the association officers and Aquatic Enhancement & Survey, Inc. regarding plant management at the lake. A discussion was held about the status and goals of the West Otter Lake Plant Management Plan and opportunity was provided for residents and lake users to ask questions and provide input regarding the plant management and water-use restrictions involved. A Eurasian watermilfoil plant and Variable watermilfoil plant were passed around the room to improve the ability of lake residents to identify and recognize them. The Lake Use Survey below (fig. 16) was distributed to a group of about 60 in attendance at the June 3 meeting. 18 surveys were completed and returned. Results are tabulated in table 14 below. Resident concerns included notification of water use restrictions. Insuring clear pre-posting of treatment areas will give residents notice of water-use restrictions. Written comments on lake-user surveys included concerns about high aquatic plant populations preventing fishing in front of residences. Concerns over the filling of the lakes northwest channels with sediment and aquatic plants were strong, especially among property owners on the center channel. Residents expressed optimism over water clarity improving in response to the recent hook-up of lake residences to the Steuben Lakes Regional Waste District treatment plant. Some concern existed as to whether 100% of residents were connected to the system. Requests were made for advice on keeping individual shorelines and beaches clean. Other respondents indicated that they felt more speed enforcement was needed or that fish stocking could improve the lakes fishery. Overall those in attendance were supportive of continued efforts to control Eurasian watermilfoil, Curlyleaf pondweed and other problem aquatic plants at West Otter Lake.

Lake Use Survey West Otter Lake 6/3/06

1. Are you a lake property owner? Yes X No_____

2. Are you currently a member of your lake association? Yes X No___

3. How many years have you been at the lake? (circle one) 2 or less,
2 – 5 years
5-10 years
(Over 10 years)

4. How do you use the lake (mark all that apply)
X Swimming X Irrigation (including lawn)
X Boating ___Drinking water
X Fishing ___Other watering plants etc.

5. Do you have aquatic plants at your shoreline in nuisance quantities? Yes X No ___

6. Does aquatic vegetation interfere with your use or enjoyment of the lake? Yes X
No___

7. Does the level of vegetation in the lake affect your property values? Yes ___ No X

8. Are you in favor of continuing efforts to control vegetation on the lake? Yes X
No ___

9. Are you aware that the LARE funds will only apply to work controlling invasive exotic species, and more work may need to be privately funded? Yes X No ___

10. Mark any of these you think are problems on your lake:
___ Too many boats access the lake
___ Too much fishing
___ Fish population problem
X Dredging needed
___ Overuse by nonresidents
X Too many aquatic plants
___ Not enough aquatic plants
___ Poor water quality
___ Pier/funneling problem

Please add any comments:

Lots of weeds + ect. in front of my trailer w/makes it very hard for my mother + grand-children to fish.

Will help w/all of this if I can afford it! Thanks

Figure 16 West Otter Lake Users Survey

Lake Property Owner?	Yes	No				
	19					
Are you an association member?	Yes	No				
	19					
Years at the lake?	2 or less	two to five	five to ten	Over 10		
	6	1	3	8		
How do you use the lake?	Swim	Irrigation	Boating	Fishing	Other	
	13	5	16	18	2	
Do you have nusiance plants?	Yes	No				
	12	5				
Does vegetation interfere with your enjoyment of the lake	Yes	No				
	13	3				
Does the lake vegetation affect	Yes	No				
your property value?	14	3				
Are you in favor of continued	Yes	No				
vegetation control?	17					
Are you aware that LARE funds will	Yes	No				
only apply to exotics?	16	1				
Mark other lake problems	Too many boats accessing	Fish population prob.	Too much fishing	Canada Geese	Dredging needed	
		6			11	
	Too many plants	Overuse by non-res	Not enough plants		Poor water quality	
	14	1			2	
Add any comments			Pier/Funneling problem			
-Too many weeds, thanks for the help						
-Water quality should improve when sewer hookup is complete						
-All the residents should have to hook to the sewer						
-Need more fish						
-Need more speed control						

Table 14 West Otter Lake 2006 Lake user survey results

11.0 Public Education

Residents and users who have attended the meetings seemed to understand the need for controlling invasive plants. The issue of controlling Purple loosestrife and other invasive wetland plants has also been addressed at the meetings and these efforts should continue in 2007. It may be wise to stress the possibility of watercraft spreading aquatic plants or introducing new invasive plants to the lake. This will be especially important now that Hydrilla has been found in Indiana (see next section). The clear posting of invasive species information at the public accesses at West Otter Lake or a basic screening process for launching watercraft may be steps to consider in helping protect the lake's plant community.

11.1 Hydrilla and it's implications for West Otter Lake

Keeping lake residents and users aware of the possibility of bringing in new invasive species on watercraft trailers will be especially important now that Hydrilla has been found in Indiana. Hydrilla *Hydrilla verticillata* is an invasive submersed aquatic plant thought to be native to Africa, Australia, and parts of Asia. As a hearty growing plant Hydrilla was used in aquariums and this led to its introduction into Florida waters in 1960. Since then Hydrilla has spread to become the single most problematic plant in the United States. (See USGS map below) In Florida alone millions are spent in controlling the growth of Hydrilla each year. The potential exists for the same type of damage on

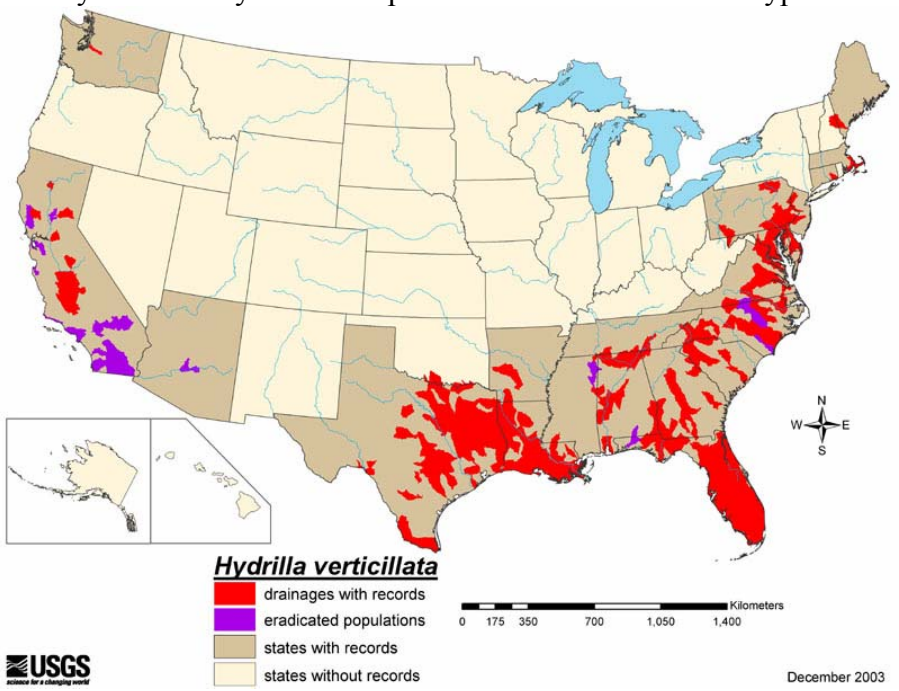


Figure 17 Known occurrences of Hydrilla in the U.S. in 2003. From the USGS website, http://nas.er.usgs.gov/taxgroup/plants/docs/hy_verti.html

Indiana waterways if Hydrilla is allowed to spread. Like many invasive aquatic plants Hydrilla can form dense surface mats depriving native plant communities of light, decreasing plant community diversity and causing serious impairment of recreational activities including fishing, swimming, and boating.

Figure 18 Hydrilla mats clog the surface of Lake Conroe Texas. Photo courtesy of Earl Chilton, Texas Parks and Wildlife Department

Hydrilla can spread by fragmentation, or the production of seeds, tubers (root structures), or turions (seed-like plant buds). Because of the potential for spread through fragmentation, plant material hitching a ride on watercraft trailers is probably a major mechanism of introduction. Tubers and turions can be very hearty surviving dry periods or herbicide treatments and remaining hidden in the lake bottom for extended periods of time. Because of these characteristics great ecological damage and recreational impairment can occur in watersheds colonized by Hydrilla. In 2006 Hydrilla was discovered in Lake Manitou in Rochester Indiana (Fulton County). This is the first known occurrence of this plant in the Midwest. The Indiana Department of Natural Resources has devised a plan for eradicating and controlling the Hydrilla to prevent spread to other water bodies. Checks of other lakes in close proximity to Lake Manitou have not located any other Hydrilla, so it is possible that the plant is only in Lake Manitou at this time. However, it's also possible that other lakes contain young Hydrilla infestations that have yet to be recognized so it's important that associations and lake residents learn to identify this plant. Acting early in spotting Hydrilla can help prevent spread and ultimately save a huge cost to the ecology and recreational value of Indiana lakes. Other infestations could also undoubtedly occur as a result of plants being transported to Indiana from out-of-state. Whereas many Steuben County Lakes are popular boating and sportfishing destinations there is a definite possibility that this plant could appear in West Otter Lake in the future. Information on Hydrilla identification should be presented to the West Otter Lake users at meetings as a regular part of the lake resident educational program.

Figure 19 Hydrilla is similar in appearance to the native plant Elodea canadensis and also Brazilian elodea, an exotic also recently found in Indiana. It forms long stems containing many whorls of short leaves.

11.1.1 Hydrilla Identification

Hydrilla strongly resembles the native aquatic plant Elodea *Elodea canadensis* and the introduced species Brazilian elodea *Egeria Densa.* Both these species can be found in Indiana although the occurrence of Brazilian elodea has been very limited thus far. Native Elodea is a part of the West Otter Lake plant community. Hydrilla is a long slender plant that sometimes branches and has short leaves arranged around the stem in a star-like (whorled) pattern. Characteristics which differentiate Hydrilla from Elodea and Brazilian Elodea include a typical leaf count of five in the whorl. Brazillian elodea typically has four to six leaves but never three, and native Elodea usually has three. (fig 20) Small teeth are also present on the midrib of Hydrilla leaves and may give the plant a "rough" feel.

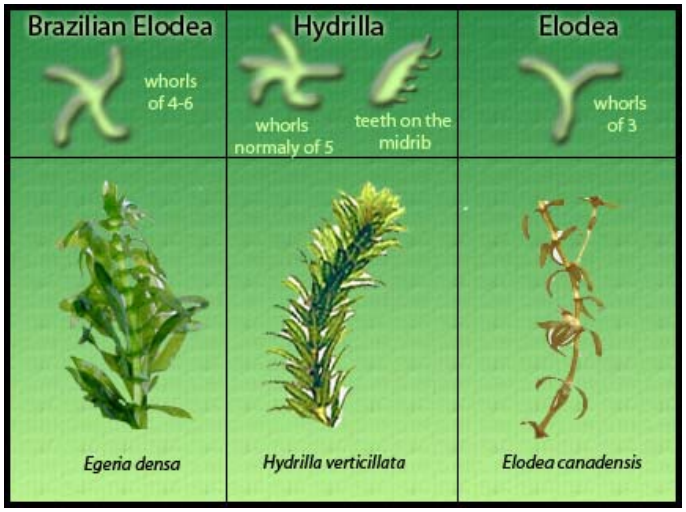


Figure 20 Brazilian elodea has a typical leaf count of 4-6, while Hydrilla's is usually 5, and Elodea's 3

Photo courtesy of Rob Nelson at ExploreBiodiversity.com

Hydrilla also has small serrations along the leaf edges (fig 21). Another distinguishing characteristic of Hydrilla is the presence of tubers (.2 to .4 inch long off-white structures attached to the root) (fig 22).

Figure 21 Edges of Hydrilla leaves have fine serrations visible upon close examination

Figure 22 Hydrilla plants with tubers attached

Anyone noting the presence of Hydrilla or Brazilian elodea is asked to immediately contact Doug Keller, Invasive species coordinator for the Indiana Department of Natural Resources at 317-234-3883, email: **dkeller@dnr.in.gov**. More information on stopping the spread of invasive aquatic species is available online at **http://www.protectyourwaters.net/**

12.0 Integrated Management Action Strategy

Based on the value of West Otter Lake as a unique public resource with two RTE species present in its plant community and the overwhelming desire by its users to continue to control the lake's Eurasian milfoil problem, it's recommended that the 2006 season's 15 acre 2,4-D application regime be repeated in 2007, but supplemented with repeated treatments of up to 15 acres in areas of returning Eurasian watermilfoil growth. Retreatment was not needed in 2006 but was in 2005. It is unknown why this disparity in treatment success occurred. Variations in treatment timing, plant life stage, or climatic conditions are all possibilities. In addition 2.5 acres of shoreline should be treated in April with Aquathol K aquatic herbicide to control excessive growth of Curlyleaf pondweed. This treatment should occur early enough to prevent turion formation. Monitoring and aquatic plant surveys per the 2007 IDNR protocol should be used to evaluate changes in the lake's plant community and treatment effectiveness. To alleviate persistent problems with shoreline nuisance native aquatic plants in some areas the Association may wish to consider a regime of contact herbicide treatments in developed shoreline areas. Treatment timing should be planned so as not to interfere with the effectiveness of the systemic Eurasian milfoil treatment. At least one public meeting should be dedicated each season to helping educate the lake residents about proper practices in managing their own lakeside properties and allow for the collection of ideas and opinions from lake users and the general public. Because extensive colonization of West Otter Lake's watershed wetlands by Purple loosestrife has implications for water quality, a basic survey should be planned in 2007 to evaluate the colonization of the shoreline and riparian wetlands by Purple Loosestrife. Resident's should be reminded to take basic efforts to control these plants along their own shoreline. This survey should be designed to evaluate the feasibility of a lake-wide control program for this invasive plant.

13.0 Estimated Project Budget and Timeline

2007

-April 2007 early treatment of 2.5 acres of Curlyleaf pondweed
$670.00

-June 2007 hold public meeting to discuss plan with community and lake users
$200.00

- May 2007 Map Exotic Plants and Designate Treatment areas
$1000.00

-Mid to late May 2007 2-4-D Eurasian watermilfoil treatment to designated areas maximum 15 acres
$6540.00

-July 2007 Tier II Plant Survey, Designate any retreatment areas
$1000.00

-June or July 2007 Marginal shoreline treatment of Purple loosestrife
$900.00

-July 2007 2-4-D Eurasian watermilfoil treatment to designated areas of re-growth, maximum 15 acres
$6540.00

-November 2007 AVMP document preparation
$900.00

2007 Total $17,750.00

14.0 References Cited

Pearson, J. 2004, A sampling method to assess occurrence, abundance and distribution

of submersed aquatic plants in Indiana lakes, Indiana Department of Natural Resources, Division of Fish and Wildlife, Tri-Lakes Fisheries Station, 5570 North Hatchery Road Columbia City, Indiana 46725

IDNR 2004. Procedure manual for surveying aquatic vegetation: Tier I and Tier II, Indiana Department of Natural Resources, Indianapolis, Indiana.

15.0 Appendices

Appendix A Tier I Data Sheets 5/06

Tier I

8

Aquatic Vegetation Reconnaissance Sampling

Waterbody Cover Sheet

Surveying Organization: AQUATIC ENHANCEMENT & SURVEY, INC.

Waterbody Name: WEST OTTER LAKE

Lake ID:

County: STEUBEN

Date: 5/15/06

Habitat Stratum: 1L

Ave. Lake Depth (ft): 17

Lake Level:

GPS Metadata

Crew Leader: SB

NAD 27 | 16 | +/- 6m

Datum: Zone: Accuracy:

Recorder:

Method: WAAS GPS

Secchi Depth (ft): 6.9

Total # of Plant Beds Surveyed: 20

Total # of Species:

Littoral Zone Size (acres): 65

- ☐ Measured
- ☒ Estimated

Littoral Zone Max. Depth (ft): 10 LIMIT OF PLANT GROWTH

- ☑ Measured
- ☐ Estimate (historical Secchi)
- ☐ Estimated (current Secchi)

Notable Conditions: SEVERAL DAYS OF RAINFALL PRECEDED SURVEY. RAINFALL DURING SURVEY. WATER CLARITY HAS SUFFERED. LAKE APPROX. 6" HIGH

Aquatic Vegetation Plant Bed Data Sheet

State of Indiana Department of Natural Resources

SECCHI 6.9'

Page ___ of ___

ORGANIZATION: AQUATIC ENHANCEMENT & SURVEY, INC.

DATE: 5/15/06

SITE INFORMATION

Plant Bed ID: 1

Waterbody Name: WEST OTTER LAKE

Bed Size:

Substrate: 3

Waterbody ID:

Marl? 0

Total # of Species

High Organic? 0

Canopy Abundance at Site

S: 2 N: F: E:

SITE COORDINATES

Center of the Bed

Latitude:

Longitude:

Max. Lakeward Extent of Bed

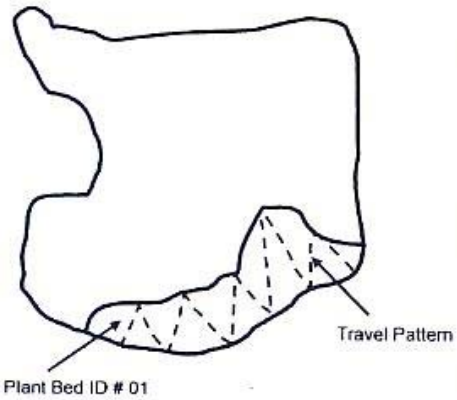
Latitude:

Longitude:

SPECIES INFORMATION

Species Code	Abundance	QE	Vchr.	Ref. ID
CH?AR				
MYSP2 ✓	2			
MYHE				
POIL				
POCR3 ✓	4			
ALGA ✓	2			
POPR5				
UTMA ✓	1			
NAFL				
POPE6 ✓	2			
ELCA ✓	2			
[illegible] ✓				
SWAMP LOUSE MAT	1			
IRBI				
LYSA				
NYTU ✓	2			
SACU ✓	2			
ARUM	2			
NULU ✓				
TYLA				
TYAN				

Individual Plant Bed Survey



Comments:

REMINDER INFORMATION

Substrate:
1 = Silt/Clay
2 = Silt w/Sand
3 = Sand w/Silt
4 = Hard Clay
5 = Gravel/Rock
6 = Sand

Marl
1 = Present
0 = absent

High Organic
1 = Present
0 = absent

Overall Surface Cover
N = Nonrooted floating
F = Floating, rooted
E = Emergent
S = Submersed

Canopy:
1 = < 2%
2 = 2-20%
3 = 21-60%
4 = > 60%

Abundance:
1 = < 2%
2 = 2-20%
3 = 21-60%
4 = > 60%

QE Code:
0 = as defined
1 = Species suspe
2 = Genus suspected
3 = Unknown

Voucher:
0 = Not Taken
1 = Taken, not varified
2 = Taken, varifiex

Reference ID:
Unique number or letter to denote specific location of a species; referenced on attached map

Aquatic Vegetation Plant Bed Data Sheet

Page ___ of ___

State of Indiana Department of Natural Resources

ORGANIZATION: AQUATIC ENHANCEMENT & SURVEY, INC. DATE: 5/15/06

SITE INFORMATION

Plant Bed ID: 2
Waterbody Name: WEST OTTER LAKE
Bed Size:
Substrate: 2 3
Waterbody ID:
Marl? 0
Total # of Species
High Organic? 1
Canopy Abundance at Site: S: N: F: E: 1

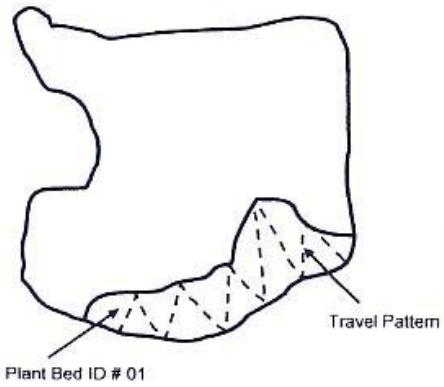
SITE COORDINATES

Center of the Bed
Latitude:
Longitude:
Max. Lakeward Extent of Bed
Latitude:
Longitude:

SPECIES INFORMATION

Species Code	Abundance	QE	Vchr.	Ref. ID
CH?AR ✓	3			
MYSP2 ✓	2			
MYHE ✓	2			
POIL				
POCR3 ✓	3			
ALGA ✓	3			
POPR5				
UTMA				
NAFL				
POPE6				
CEDE ✓	2			
ELCA ✓	2			
~~UNKI~~ 026	2	2		1
PHAR ✓	2			
WATER CREST ✓	2			
LYSA				
~~NYMU~~				
SACU				
ARUM				
NULU ✓	2			
TYLA ✓	1			
TYAN				

Individual Plant Bed Survey



Comments:
LOTS OF CURRLY LEAVES
UNKI THIN LEAVE POND WEED

REMINDER INFORMATION

Substrate:
1 = Silt/Clay
2 = Silt w/Sand
3 = Sand w/Silt
4 = Hard Clay
5 = Gravel/Rock
6 = Sand

Marl
1 = Present
0 = absent

High Organic
1 = Present
0 = absent

Overall Surface Cover
N = Nonrooted floating
F = Floating, rooted
E = Emergent
S = Submersed

Canopy:
1 = < 2%
2 = 2-20%
3 = 21-60%
4 = > 60%

Abundance:
1 = < 2%
2 = 2-20%
3 = 21-60%
4 = > 60%

QE Code:
0 = as defined
1 = Species suspe
2 = Genus suspected
3 = Unknown

Voucher:
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1 = Taken, not varified
2 = Taken, varifie

Reference ID:
Unique number or letter to denote specific location of a species; referenced on attached map

Aquatic Vegetation Plant Bed Data Sheet

Page ___ of ___

State of Indiana Department of Natural Resources

ORGANIZATION: AQUATIC ENHANCEMENT & SURVEY, INC. DATE: 5/15/06

SITE INFORMATION

Plant Bed ID: 3
Waterbody Name: WEST OTTER LAKE
Bed Size:
Substrate: 2
Waterbody ID:
Marl? 0
Total # of Species
High Organic? 1
CanopyAbundance at Site
S: N: F: E: 1

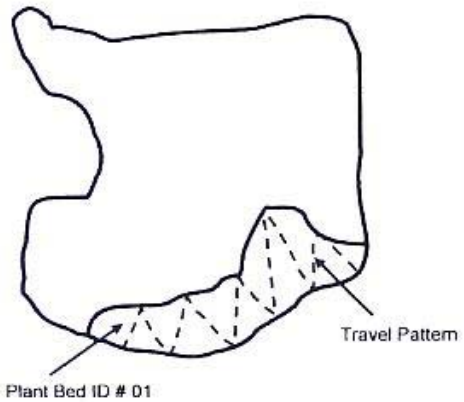
SITE COORDINATES

Center of the Bed
Latitude:
Longitude:
Max. Lakeward Extent of Bed
Latitude:
Longitude:

SPECIES INFORMATION

Species Code	Abundance	QE	Vchr.	Ref. ID
CH?AR ✓	1			
MYSP2 ✓	1			
MYHE ✓	1			
POIL				
POCR3				
ALGA ✓	1			
POPR5				
UTMA				
NAFL				
POPE6				
ELCA ✓	4	4		
POZO ✓	2			
IRRI ✓				
LYSA				
NYTU ✓				
SACU				
ARUM				
NULU ✓				
TYLA				
TYAN				

Individual Plant Bed Survey



Comments:

LIGHT GRAY TURBITY FROM CHANNEL END

FEW PLANTS AT END OF CHANNEL

REMINDER INFORMATION

Substrate:
1 = Silt/Clay
2 = Silt w/Sand
3 = Sand w/Silt
4 = Hard Clay
5 = Gravel/Rock
6 = Sand

Marl
1 = Present
0 = absent

High Organic
1 = Present
0 = absent

Overall Surface Cover
N = Nonrooted floating
F = Floating, rooted
E = Emergent
S = Submersed

Canopy:
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2 = 2-20%
3 = 21-60%
4 = > 60%

Abundance:
1 = < 2%
2 = 2-20%
3 = 21-60%
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QE Code:
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1 = Species suspe
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3 = Unknown

Voucher:
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2 = Taken, varifiex

Reference ID:
Unique number or letter to denote specific location of a species; referenced on attached map

Aquatic Vegetation Plant Bed Data Sheet

Page ___ of ___

State of Indiana Department of Natural Resources

ORGANIZATION: AQUATIC ENHANCEMENT & SURVEY, INC. DATE: 5/19/06

SITE INFORMATION

Plant Bed ID: 4
Bed Size:
Substrate: 2
Marl? 0
High Organic? 0

Waterbody Name: WEST OTTER LAKE
Waterbody ID:
Total # of Species

Canopy Abundance at Site

S:	N.	F:	E: 1

SITE COORDINATES

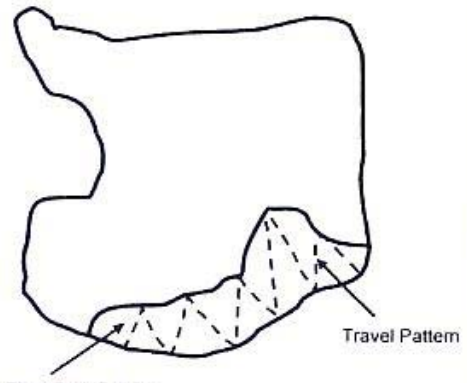
Center of the Bed
Latitude:
Longitude:

Max. Lakeward Extent of Bed
Latitude:
Longitude:

SPECIES INFORMATION

Species Code	Abundance	QE	Vchr.	Ref. ID
CH?AR ✓	3			
MYSP2 ✓	2			
MYHE ✓	2			
POIL				
POCR3 ✓	2			
ALGA				
POPR5 ✓	2			
UTMA				
NAFL				
POPE6				
ELCA ✓	3			
PO·ZO ✓	2			
CEDE ✓	1			
LYSA				
NYTU ✓	2			
SACU				
ARUM				
NULU				
TYLA				
TYAN				

Individual Plant Bed Survey



Comments:

REMINDER INFORMATION

Substrate:
1 = Silt/Clay
2 = Silt w/Sand
3 = Sand w/Silt
4 = Hard Clay
5 = Gravel/Rock
6 = Sand

Marl
1 = Present
0 = absent

High Organic
1 = Present
0 = absent

Overall Surface Cover
N = Nonrooted floating
F = Floating, rooted
E = Emergent
S = Submersed

Canopy:
1 = < 2%
2 = 2-20%
3 = 21-60%
4 = > 60%

Abundance:
1 = < 2%
2 = 2-20%
3 = 21-60%
4 = > 60%

QE Code:
0 = as defined
1 = Species suspe
2 = Genus suspected
3 = Unknown

Voucher:
0 = Not Taken
1 = Taken, not varified
2 = Taken, varifiec

Reference ID:
Unique number or letter to denote specific location of a species; referenced on attached map

Aquatic Vegetation Plant Bed Data Sheet

Page ___ of ___

State of Indiana Department of Natural Resources

ORGANIZATION: AQUATIC ENHANCEMENT & SURVEY, INC.

DATE: 5/15/06

SITE INFORMATION

Plant Bed ID: 5

Waterbody Name: WEST OTTER LAKE

Bed Size:

Substrate: 2

Waterbody ID:

Marl? 0

Total # of Species

High Organic? 1

Canopy Abundance at Site

S: N: F: E:

SITE COORDINATES

Center of the Bed

Latitude:

Longitude:

Max. Lakeward Extent of Bed

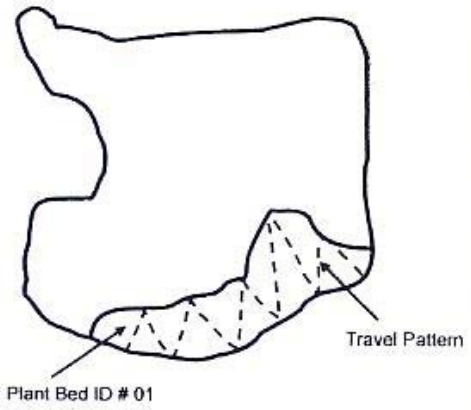
Latitude:

Longitude:

SPECIES INFORMATION

Species Code	Abundance	QE	Vchr.	Ref. ID
CH?AR ✓	1			
MYSP2 ✓	1F			
MYHE ✓	1			
POIL				
POCR3 ✓	4			
ALGA				
POPR5				
UTMA				
NAFL				
POPE6				
1				
POCH ✓	1			
LYSA				
NYTU				
SACU ✓	1			
ARUM				
NULU				
TYLA				
TYAN				

Individual Plant Bed Survey



Comments:

TOPT CURLY LEAF AT MOUTH - LONG EDGE

BAD CURLY LEAF

REMINDER INFORMATION

Substrate:
1 = Silt/Clay
2 = Silt w/Sand
3 = Sand w/Silt
4 = Hard Clay
5 = Gravel/Rock
6 = Sand

Marl
1 = Present
0 = absent

High Organic
1 = Present
0 = absent

Overall Surface Cover
N = Nonrooted floating
F = Floating, rooted
E = Emergent
S = Submersed

Canopy:
1 = < 2%
2 = 2-20%
3 = 21-60%
4 = > 60%

Abundance:
1 = < 2%
2 = 2-20%
3 = 21-60%
4 = > 60%

QE Code:
0 = as defined
1 = Species suspe
2 = Genus suspected
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Voucher:
0 = Not Taken
1 = Taken, not varified
2 = Taken, varifiex

Reference ID:
Unique number or letter to denote specific location of a species; referenced on attached map

Aquatic Vegetation Plant Bed Data Sheet

Page ___ of ___

State of Indiana Department of Natural Resources

ORGANIZATION: AQUATIC ENHANCEMENT & SURVEY, INC. DATE: 5/19/06

SITE INFORMATION

Plant Bed ID: C

Waterbody Name: WEST OTTER LAKE

Bed Size:

Substrate: 2

Waterbody ID:

Marl? 0

Total # of Species

High Organic? 0

CanopyAbundance at Site

S:	N:	F:	E: 1

SITE COORDINATES

Center of the Bed

Latitude:

Longitude:

Max. Lakeward Extent of Bed

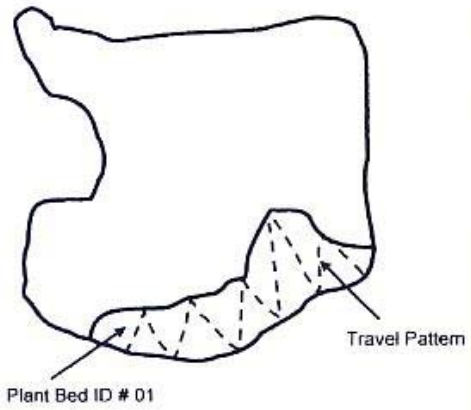
Latitude:

Longitude:

SPECIES INFORMATION

Species Code	Abundance	QE	Vchr.	Ref. ID
CH?AR				
MYSP2				
MYHE ✓	1			
POIL ✓	1			
POCR3 ✓	2			
ALGA				
POPR5				
UTMA				
NAFL				
POPE6				
1				
LYSA				
NYTU				
SACU				
ARUM				
NULU				
TYLA ✓	1			
TYAN				

Individual Plant Bed Survey



Comments:

RELATIVLY SPARSE
FEW NATIVES

REMINDER INFORMATION

Substrate:
1 = Silt/Clay
2 = Silt w/Sand
3 = Sand w/Silt
4 = Hard Clay
5 = Gravel/Rock
6 = Sand

Marl
1 = Present
0 = absent

High Organic
1 = Present
0 = absent

Overall Surface Cover
N = Nonrooted floating
F = Floating, rooted
E = Emergent
S = Submersed

Canopy:
1 = < 2%
2 = 2-20%
3 = 21-60%
4 = > 60%

Abundance:
1 = < 2%
2 = 2-20%
3 = 21-60%
4 = > 60%

QE Code:
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1 = Species suspe
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Voucher:
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Reference ID:
Unique number or letter to denote specific location of a species; referenced on attached map

Aquatic Vegetation Plant Bed Data Sheet

Page ___ of ___

State of Indiana Department of Natural Resources

ORGANIZATION: AQUATIC ENHANCEMENT & SURVEY, INC.

DATE: 5/15/06

SITE INFORMATION

Plant Bed ID: 7

Waterbody Name: WEST OTTER LAKE

Bed Size:

Substrate: 2

Waterbody ID:

Marl? 0

Total # of Species

High Organic? 1

Canopy Abundance at Site

S: N: F: E: 1

SITE COORDINATES

Center of the Bed

Latitude:

Longitude:

Max. Lakeward Extent of Bed

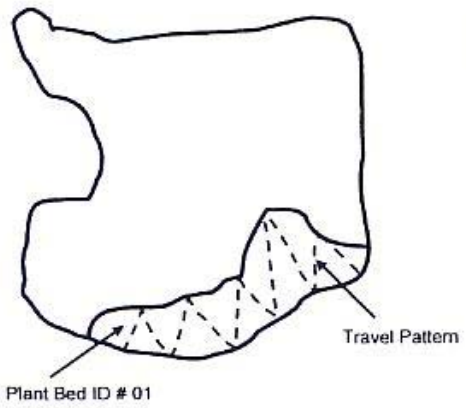
Latitude:

Longitude:

SPECIES INFORMATION

Species Code	Abundance	QE	Vchr.	Ref. ID
CH?AR				
MYSP2 ✓	2			
MYHE ✓	4			
POIL ✓	2			
POCR3 ✓	3			
ALGA ✓	2			
POPR5				
UTMA				
NAFL ✓	2			
POPE6 ✓	2			
ELCA ✓	2			
NUAD POCO ✓	2			
POZO ✓	2			
CEDE ✓	2			
LYSA				
NYTU				
SACU ✓	1			
ARUM				
NULU				
TYLA				
TYAN				

Individual Plant Bed Survey



Comments:

SUGHIF MYSP NEMA
ICARIT MOUTH

REMINDER INFORMATION

Substrate:
1 = Silt/Clay
2 = Silt w/Sand
3 = Sand w/Silt
4 = Hard Clay
5 = Gravel/Rock
6 = Sand

Marl
1 = Present
0 = absent

High Organic
1 = Present
0 = absent

Overall Surface Cover
N = Nonrooted floating
F = Floating, rooted
E = Emergent
S = Submersed

Canopy:
1 = < 2%
2 = 2-20%
3 = 21-60%
4 = > 60%

Abundance:
1 = < 2%
2 = 2-20%
3 = 21-60%
4 = > 60%

QE Code:
0 = as defined
1 = Species suspe
2 = Genus suspected
3 = Unknown

Voucher:
0 = Not Taken
1 = Taken, not varified
2 = Taken, varifiex

Reference ID:
Unique number or letter to denote specific location of a species; referenced on attached map

Aquatic Vegetation Plant Bed Data Sheet

Page ___ of ___

State of Indiana Department of Natural Resources

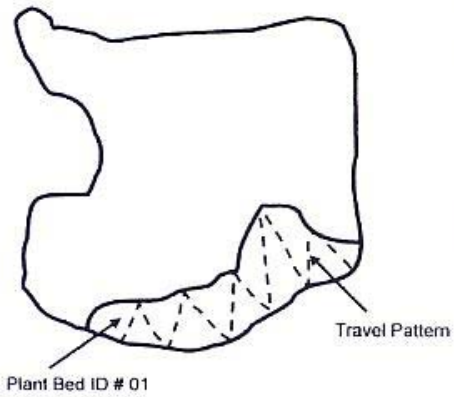
ORGANIZATION: AQUATIC ENHANCEMENT & SURVEY, INC. DATE: 5/19/06

SITE INFORMATION		SITE COORDINATES
Plant Bed ID: 8	Waterbody Name: WEST OTTER LAKE	Center of the Bed
Bed Size:		Latitude:
Substrate: 2	Waterbody ID:	Longitude:
Marl? 5	Total # of Species	Max. Lakeward Extent of Bed
High Organic? 0	Canopy Abundance at Site	Latitude:
	S: N: F: E: 1	Longitude:

SPECIES INFORMATION

Species Code	Abundance	QE	Vchr.	Ref. ID
CH?AR ✓	2			
MYSP2 ✓	3			
MYHE ✓	2			
POIL ✓	1			
POCR3 ✓	3			
ALGA				
POPR5 ✓	~~2~~ 3			
UTMA				
NAFL				
POPE6				
L				
HYBRID PONDWEED	2			
LYSA				
NYTU				
SACU ✓	2			
ARUM				
NULU ✓	2			
TYLA				
TYAN				

Individual Plant Bed Survey



Comments: LOTS OF WHITE STEMMED

REMINDER INFORMATION

Substrate:
1 = Silt/Clay
2 = Silt w/Sand
3 = Sand w/Silt
4 = Hard Clay
5 = Gravel/Rock
6 = Sand

Marl
1 = Present
0 = absent

High Organic
1 = Present
0 = absent

Overall Surface Cover
N = Nonrooted floating
F = Floating, rooted
E = Emergent
S = Submersed

Canopy:
1 = < 2%
2 = 2-20%
3 = 21-60%
4 = > 60%

Abundance:
1 = < 2%
2 = 2-20%
3 = 21-60%
4 = > 60%

QE Code:
0 = as defined
1 = Species susp
2 = Genus suspected
3 = Unknown

Voucher:
0 = Not Taken
1 = Taken, not varified
2 = Taken, varifier

Reference ID:
Unique number or letter to denote specific location of a species; referenced on attached map

Aquatic Vegetation Plant Bed Data Sheet

Page ___ of ___

State of Indiana Department of Natural Resources

ORGANIZATION: AQUATIC ENHANCEMENT & SURVEY, INC. DATE: 5/19/06

SITE INFORMATION

Plant Bed ID: 9

Waterbody Name: WEST OTTER LAKE

Bed Size:

Substrate: C

Waterbody ID:

Marl? 0

Total # of Species

High Organic? 0

CanopyAbundance at Site

S:	N:	F:	E:

SITE COORDINATES

Center of the Bed

Latitude:

Longitude:

Max. Lakeward Extent of Bed

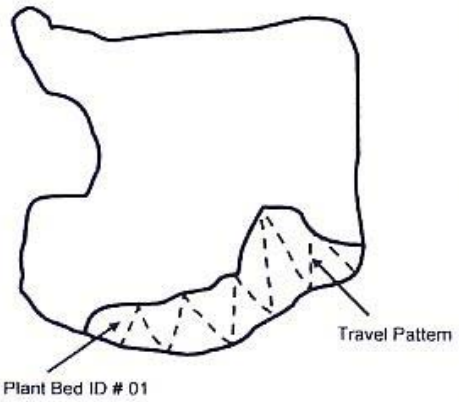
Latitude:

Longitude:

SPECIES INFORMATION

Species Code	Abundance	QE	Vchr.	Ref. ID
CH?AR ✓	3			
~~MYSP2~~				
MYHE ✓	3			
POIL ✓	2			
POCR3 ✓	2			
ALGA				
POPR5 ✓	1			
UTMA				
NAFL				
POPE6				
NEEDLE RUSH	2			
1				
LYSA				
NYTU				
SACU				
ARUM				
NULU				
TYLA				
TYAN				

Individual Plant Bed Survey



Comments:

REMINDER INFORMATION

Substrate:
1 = Silt/Clay
2 = Silt w/Sand
3 = Sand w/Silt
4 = Hard Clay
5 = Gravel/Rock
6 = Sand

Marl
1 = Present
0 = absent

High Organic
1 = Present
0 = absent

Overall Surface Cover
N = Nonrooted floating
F = Floating, rooted
E = Emergent
S = Submersed

Canopy:
1 = < 2%
2 = 2-20%
3 = 21-60%
4 = > 60%

Abundance:
1 = < 2%
2 = 2-20%
3 = 21-60%
4 = > 60%

QE Code:
0 = as defined
1 = Species suspe
2 = Genus suspected
3 = Unknown

Voucher:
0 = Not Taken
1 = Taken, not varified
2 = Taken, varifiec

Reference ID:
Unique number or letter to denote specific location of a species; referenced on attached map

Aquatic Vegetation Plant Bed Data Sheet

Page ___ of ___

State of Indiana Department of Natural Resources

ORGANIZATION: AQUATIC ENHANCEMENT & SURVEY, INC.

DATE: 5/15/06

SITE INFORMATION

Plant Bed ID: 10

Waterbody Name: WEST OTTER LAKE

Bed Size:

Substrate: 2

Waterbody ID:

Marl? 0

Total # of Species

High Organic? 0

CanopyAbundance at Site

S: N: F: E: 3

SITE COORDINATES

Center of the Bed

Latitude:

Longitude:

Max. Lakeward Extent of Bed

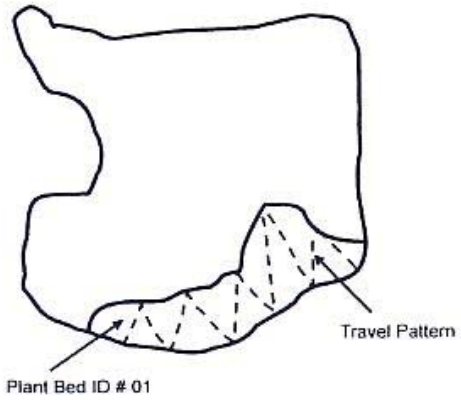
Latitude:

Longitude:

SPECIES INFORMATION

Species Code	Abundance	QE	Vchr.	Ref. ID
CHAR ✓	3			
MYSP2				
MYHE ✓	1			
POIL ✓	2			
POCR3				
ALGA				
POPR5				
UTMA				
NAFL				
POPE6				
IRVI ✓	2			
WILLOW ✓	2			
SC SP. ✓	3			
LYSA ✓	2			
NYTU ✓	1			
SACU				
ARUM				
NULU				
TYLA				
TYAN				

Individual Plant Bed Survey



Comments:

NO DEEP PLANTS

RUSH BEAD

REMINDER INFORMATION

Substrate:
1 = Silt/Clay
2 = Silt w/Sand
3 = Sand w/Silt
4 = Hard Clay
5 = Gravel/Rock
6 = Sand

Marl
1 = Present
0 = absent

High Organic
1 = Present
0 = absent

Overall Surface Cover
N = Nonrooted floating
F = Floating, rooted
E = Emergent
S = Submersed

Canopy:
1 = < 2%
2 = 2-20%
3 = 21-60%
4 = > 60%

Abundance:
1 = < 2%
2 = 2-20%
3 = 21-60%
4 = > 60%

QE Code:
0 = as defined
1 = Species suspe
2 = Genus suspected
3 = Unknown

Voucher:
0 = Not Taken
1 = Taken, not varified
2 = Taken, varifier

Reference ID:
Unique number or letter to denote specific location of a species; referenced on attached map

Aquatic Vegetation Plant Bed Data Sheet

Page ___ of ___

State of Indiana Department of Natural Resources

ORGANIZATION: AQUATIC ENHANCEMENT & SURVEY, INC. DATE: 5/15/06

SITE INFORMATION

Plant Bed ID: 11
Bed Size:
Substrate: 2
Marl? 0
High Organic? 0

Waterbody Name: WEST OTTER LAKE
Waterbody ID:
Total # of Species

Canopy Abundance at Site

S:	N:	F:	E:

SITE COORDINATES

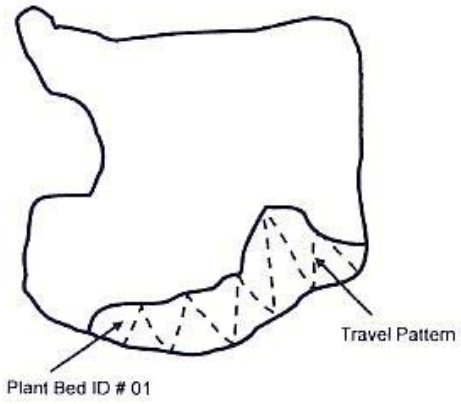
Center of the Bed
Latitude:
Longitude:

Max. Lakeward Extent of Bed
Latitude:
Longitude:

SPECIES INFORMATION

Species Code	Abundance	QE	Vchr.	Ref. ID
CHAR ✓	3			
MYSP2 ✓	2			
MYHE ✓	2			
POIL ✓	2			
POCR3 ✓	2			
ALGA				
POPR5 ✓	1			
UTMA				
NAFL				
POPE6				
POZO ✓	1			
ELCA ✓	2			
~~[illegible]~~				
LYSA				
NYTU				
SACU				
ARUM				
NULU				
TYLA				
TYAN				

Individual Plant Bed Survey



Comments:

REMINDER INFORMATION

Substrate:
1 = Silt/Clay
2 = Silt w/Sand
3 = Sand w/Silt
4 = Hard Clay
5 = Gravel/Rock
6 = Sand

Marl
1 = Present
0 = absent

High Organic
1 = Present
0 = absent

Overall Surface Cover
N = Nonrooted floating
F = Floating, rooted
E = Emergent
S = Submersed

Canopy:
1 = < 2%
2 = 2-20%
3 = 21-60%
4 = > 60%

Abundance:
1 = < 2%
2 = 2-20%
3 = 21-60%
4 = > 60%

QE Code:
0 = as defined
1 = Species suspe
2 = Genus suspected
3 = Unknown

Voucher:
0 = Not Taken
1 = Taken, not varified
2 = Taken, varifiec

Reference ID:
Unique number or letter to denote specific location of a species; referenced on attached map

Aquatic Vegetation Plant Bed Data Sheet

Page ___ of ___

State of Indiana Department of Natural Resources

ORGANIZATION: AQUATIC ENHANCEMENT & SURVEY, INC.

DATE: 5/15/06

SITE INFORMATION

Plant Bed ID: 12

Waterbody Name: WEST OTTER LAKE

Bed Size:

Substrate: 2

Waterbody ID:

Marl? 0

Total # of Species

High Organic? 1

CanopyAbundance at Site

S:	N:	F:	E:

SITE COORDINATES

Center of the Bed

Latitude:

Longitude:

Max. Lakeward Extent of Bed

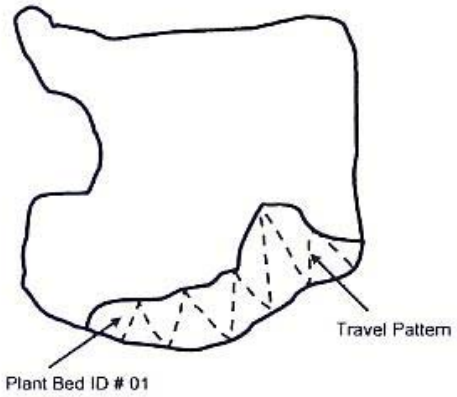
Latitude:

Longitude:

SPECIES INFORMATION

Species Code	Abundance	QE	Vchr.	Ref. ID
CHAR ✓	4			
MYSP2 ✓	2			
MYHE ✓	2			
POIL				
POCR3 ✓	1			
ALGA				
POPR5				
UTMA				
NAFL				
POPE6				
CEDE ✓	1			
POZO ✓	1			
LYSA				
NYTU				
SACU				
ARUM				
NULU				
TYLA				
TYAN				

Individual Plant Bed Survey



Comments:

REMINDER INFORMATION

Substrate:
1 = Silt/Clay
2 = Silt w/Sand
3 = Sand w/Silt
4 = Hard Clay
5 = Gravel/Rock
6 = Sand

Marl
1 = Present
0 = absent

High Organic
1 = Present
0 = absent

Overall Surface Cover
N = Nonrooted floating
F = Floating, rooted
E = Emergent
S = Submersed

Canopy:
1 = < 2%
2 = 2-20%
3 = 21-60%
4 = > 60%

Abundance:
1 = < 2%
2 = 2-20%
3 = 21-60%
4 = > 60%

QE Code:
0 = as defined
1 = Species suspe
2 = Genus suspected
3 = Unknown

Voucher:
0 = Not Taken
1 = Taken, not varified
2 = Taken, varifie

Reference ID:
Unique number or letter to denote specific location of a species; referenced on attached map

Aquatic Vegetation Plant Bed Data Sheet

Page ___ of ___

State of Indiana Department of Natural Resources

ORGANIZATION: AQUATIC ENHANCEMENT & SURVEY, INC.

DATE: 5/15/06

SITE INFORMATION

Plant Bed ID: 13

Waterbody Name: WEST OTTER LAKE

Bed Size:

Substrate: 2

Waterbody ID:

Marl? 0

Total # of Species

High Organic? 0

Canopy Abundance at Site

S: N: F: E: 1

SITE COORDINATES

Center of the Bed

Latitude:

Longitude:

Max. Lakeward Extent of Bed

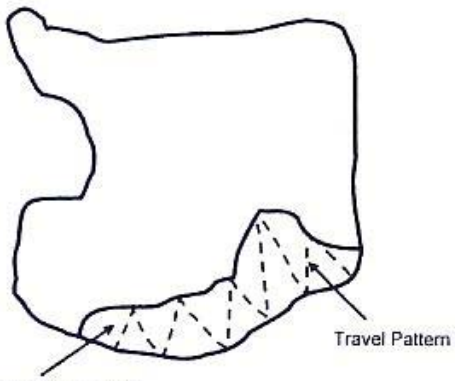
Latitude:

Longitude:

SPECIES INFORMATION

Species Code	Abundance	QE	Vchr.	Ref. ID
CH?AR				
MYSP2				
MYHE ✓	1			
POIL	1			
POCR3 ✓	1			
ALGA				
POPR5 ✓	2			
UTMA				
NAFL				
POPE6				
~~Dupoil ✓~~	1 X			
POZO ✓	1			
L				
LYSA				
NYTU ✓	2			
SACU				
ARUM				
NULU				
TYLA				
TYAN				

Individual Plant Bed Survey



Comments:

REMINDER INFORMATION

Substrate:
1 = Silt/Clay
2 = Silt w/Sand
3 = Sand w/Silt
4 = Hard Clay
5 = Gravel/Rock
6 = Sand

Marl
1 = Present
0 = absent

High Organic
1 = Present
0 = absent

Overall Surface Cover
N = Nonrooted floating
F = Floating, rooted
E = Emergent
S = Submersed

Canopy:
1 = < 2%
2 = 2-20%
3 = 21-60%
4 = > 60%

Abundance:
1 = < 2%
2 = 2-20%
3 = 21-60%
4 = > 60%

QE Code:
0 = as defined
1 = Species suspe
2 = Genus suspected
3 = Unknown

Voucher:
0 = Not Taken
1 = Taken, not varified
2 = Taken, varifie

Reference ID:
Unique number or letter to denote specific location of a species; referenced on attached map

Aquatic Vegetation Plant Bed Data Sheet

Page ___ of ___

State of Indiana Department of Natural Resources

ORGANIZATION: AQUATIC ENHANCEMENT & SURVEY, INC. DATE: 5/19/06

SITE INFORMATION

Plant Bed ID: 14

Waterbody Name: WEST OTTER LAKE

Bed Size:

Substrate: 2

Waterbody ID:

Marl? 0

Total # of Species

High Organic? 6

CanopyAbundance at Site

S:	N:	F:	E:

SITE COORDINATES

Center of the Bed

Latitude:

Longitude:

Max. Lakeward Extent of Bed

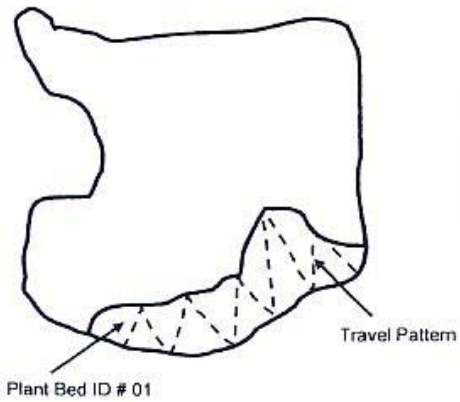
Latitude:

Longitude:

SPECIES INFORMATION

Species Code	Abundance	QE	Vchr.	Ref. ID
CH?AR ✓	3			
MYSP2 ✓	3			
MYHE ✓	1			
POIL				
POCR3 ✓	3			
ALGA				
POPR5				
UTMA				
NAFL				
POPE6				
1				
LYSA				
NYTU				
SACU				
ARUM				
NULU				
TYLA				
TYAN				

Individual Plant Bed Survey



Comments:
AVOING THE SHORE

REMINDER INFORMATION

Substrate:
1 = Silt/Clay
2 = Silt w/Sand
3 = Sand w/Silt
4 = Hard Clay
5 = Gravel/Rock
6 = Sand

Marl
1 = Present
0 = absent

High Organic
1 = Present
0 = absent

Overall Surface Cover
N = Nonrooted floating
F = Floating, rooted
E = Emergent
S = Submersed

Canopy:
1 = < 2%
2 = 2-20%
3 = 21-60%
4 = > 60%

Abundance:
1 = < 2%
2 = 2-20%
3 = 21-60%
4 = > 60%

QE Code:
0 = as defined
1 = Species suspe
2 = Genus suspected
3 = Unknown

Voucher:
0 = Not Taken
1 = Taken, not varified
2 = Taken, varifie

Reference ID:
Unique number or letter to denote specific location of a species. referenced on attached map

Aquatic Vegetation Plant Bed Data Sheet

Page ___ of ___

State of Indiana Department of Natural Resources

ORGANIZATION: AQUATIC ENHANCEMENT & SURVEY, INC.

DATE: 5/15/06

SITE INFORMATION

Plant Bed ID: 15

Waterbody Name: WEST OTTER LAKE

Bed Size:

Substrate: 2

Waterbody ID:

Marl? 0

Total # of Species

High Organic? 0

Canopy Abundance at Site

S:	N:	F:	E: 1

SITE COORDINATES

Center of the Bed

Latitude:

Longitude:

Max. Lakeward Extent of Bed

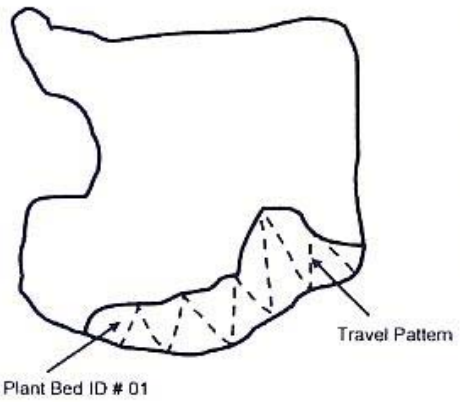
Latitude:

Longitude:

SPECIES INFORMATION

Species Code	Abundance	QE	Vchr.	Ref. ID
CH?AR ✓	2			
MYSP2 ✓	2			
MYHE ✓	2			
POIL ✓	1			
POCR3 ✓	2			
ALGA ✓	1			
POPR5				
UTMA				
NAFL				
POPE6				
PO20 ✓	1			
ELCA ✓	2			
EQEQ ✓	1			
SC SP ✓	1			
IRBI ✓	1			
LYSA				
NYTU ✓	1			
SACU				
ARUM				
NULU ✓	1			
TYLA				
TYAN				

Individual Plant Bed Survey



Comments:

THICK UWM

REMINDER INFORMATION

Substrate:
1 = Silt/Clay
2 = Silt w/Sand
3 = Sand w/Silt
4 = Hard Clay
5 = Gravel/Rock
6 = Sand

Marl
1 = Present
0 = absent

High Organic
1 = Present
0 = absent

Overall Surface Cover
N = Nonrooted floating
F = Floating, rooted
E = Emergent
S = Submersed

Canopy:
1 = < 2%
2 = 2-20%
3 = 21-60%
4 = > 60%

Abundance:
1 = < 2%
2 = 2-20%
3 = 21-60%
4 = > 60%

QE Code:
0 = as defined
1 = Species suspe
2 = Genus suspected
3 = Unknown

Voucher:
0 = Not Taken
1 = Taken, not varified
2 = Taken, varifiex

Reference ID:
Unique number or letter to denote specific location of a species; referenced on attached map

Aquatic Vegetation Plant Bed Data Sheet

Page ___ of ___

State of Indiana Department of Natural Resources

ORGANIZATION: AQUATIC ENHANCEMENT & SURVEY, INC.

DATE: 5/19/06

SITE INFORMATION

Plant Bed ID: 16

Waterbody Name: WEST OTTER LAKE

Bed Size:

Substrate: 2

Waterbody ID:

Marl? 0

Total # of Species

High Organic? 0

Canopy Abundance at Site

S:	N:	F:	E:

SITE COORDINATES

Center of the Bed

Latitude:

Longitude:

Max. Lakeward Extent of Bed

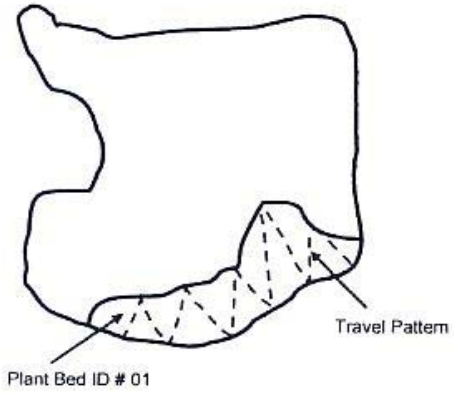
Latitude:

Longitude:

SPECIES INFORMATION

Species Code	Abundance	QE	Vchr.	Ref. ID
CH?AR ✓	3			
MYSP2				
MYHE ✓				
POIL ✓	1			
POCR3 ✓	1			
ALGA				
POPR5				
UTMA				
NAFL				
POPE6				
[illegible]				
1				
SC SP ✓	1			
LYSA				
NYTU ✓	1			
SACU				
ARUM				
NULU				
TYLA				
TYAN				

Individual Plant Bed Survey



Comments:

REMINDER INFORMATION

Substrate:
1 = Silt/Clay
2 = Silt w/Sand
3 = Sand w/Silt
4 = Hard Clay
5 = Gravel/Rock
6 = Sand

Marl
1 = Present
0 = absent

High Organic
1 = Present
0 = absent

Overall Surface Cover
N = Nonrooted floating
F = Floating, rooted
E = Emergent
S = Submersed

Canopy:
1 = < 2%
2 = 2-20%
3 = 21-60%
4 = > 60%

Abundance:
1 = < 2%
2 = 2-20%
3 = 21-60%
4 = > 60%

QE Code:
0 = as defined
1 = Species suspe
2 = Genus suspected
3 = Unknown

Voucher:
0 = Not Taken
1 = Taken, not varified
2 = Taken, varifie

Reference ID:
Unique number or letter to denote specific location of a species; referenced on attached map

Aquatic Vegetation Plant Bed Data Sheet

Page ___ of ___

State of Indiana Department of Natural Resources

ORGANIZATION: AQUATIC ENHANCEMENT & SURVEY, INC. DATE: 5/15/06

SITE INFORMATION

Plant Bed ID: 1

Waterbody Name: WEST OTTER LAKE

Bed Size:

Substrate: 2

Marl? (1)

Waterbody ID:

Total # of Species

High Organic? (0)

Canopy Abundance at Site

S: N: F: E: 1

SITE COORDINATES

Center of the Bed

Latitude:

Longitude:

Max. Lakeward Extent of Bed

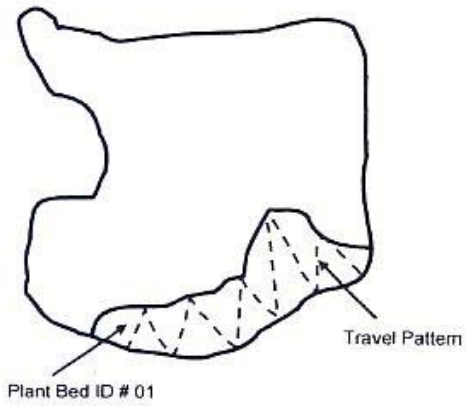
Latitude:

Longitude:

SPECIES INFORMATION

Species Code	Abundance	QE	Vchr.	Ref. ID
CH?AR	4			
MYSP2	1			
MYHE	3			
POIL	2			
POCR3	2			
ALGA				
POPR5				
UTMA				
NAFL				
POPE6				
POZO	1			
L				
LYSA				
NYTU				
SACU				
ARUM				
NULU				
TYLA				
TYAN				

Individual Plant Bed Survey



Comments:

REMINDER INFORMATION

Substrate:
1 = Silt/Clay
2 = Silt w/Sand
3 = Sand w/Silt
4 = Hard Clay
5 = Gravel/Rock
6 = Sand

Marl
1 = Present
0 = absent

High Organic
1 = Present
0 = absent

Overall Surface Cover
N = Nonrooted floating
F = Floating, rooted
E = Emergent
S = Submersed

Canopy:
1 = < 2%
2 = 2-20%
3 = 21-60%
4 = > 60%

Abundance:
1 = < 2%
2 = 2-20%
3 = 21-60%
4 = > 60%

QE Code:
0 = as defined
1 = Species suspe
2 = Genus suspected
3 = Unknown

Voucher:
0 = Not Taken
1 = Taken, not varified
2 = Taken, varifier

Reference ID:
Unique number or letter to denote specific location of a species; referenced on attached map

Aquatic Vegetation Plant Bed Data Sheet

Page ___ of ___

State of Indiana Department of Natural Resources

ORGANIZATION: AQUATIC ENHANCEMENT & SURVEY, INC. DATE: 5/15/06

SITE INFORMATION

Plant Bed ID: 18

Waterbody Name: WEST OTTER LAKE

Bed Size:

Substrate: 2

Waterbody ID:

Marl? 0

Total # of Species

High Organic? 0

Canopy Abundance at Site

S: N: F: E:

SITE COORDINATES

Center of the Bed

Latitude:

Longitude:

Max. Lakeward Extent of Bed

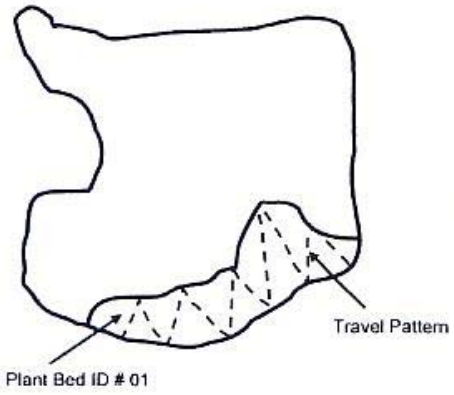
Latitude:

Longitude:

SPECIES INFORMATION

Species Code	Abundance	QE	Vchr.	Ref. ID
CH?AR	3			
MYSP2				
MYHE				
POIL	3			
POCR3	3			
ALGA				
POPR5	1			
UTMA				
NAFL				
POPE6				
CEBE	1			
[illegible]				
SE [illegible]	3			
LYSA				
NYTU	2			
SACU				
ARUM				
NULU				
TYLA				
TYAN				

Individual Plant Bed Survey



Comments: SHORE [illegible]

REMINDER INFORMATION

Substrate:
1 = Silt/Clay
2 = Silt w/Sand
3 = Sand w/Silt
4 = Hard Clay
5 = Gravel/Rock
6 = Sand

Marl
1 = Present
0 = absent

High Organic
1 = Present
0 = absent

Overall Surface Cover
N = Nonrooted floating
F = Floating, rooted
E = Emergent
S = Submersed

Canopy:
1 = < 2%
2 = 2-20%
3 = 21-60%
4 = > 60%

Abundance:
1 = < 2%
2 = 2-20%
3 = 21-60%
4 = > 60%

QE Code:
0 = as defined
1 = Species suspe
2 = Genus suspected
3 = Unknown

Voucher:
0 = Not Taken
1 = Taken, not varified
2 = Taken, varifiex

Reference ID:
Unique number or letter to denote specific location of a species; referenced on attached map

Aquatic Vegetation Plant Bed Data Sheet

Page ___ of ___

State of Indiana Department of Natural Resources

ORGANIZATION: AQUATIC ENHANCEMENT & SURVEY, INC. DATE: 5/19/06

SITE INFORMATION

Plant Bed ID: 19
Bed Size:
Substrate: 2
Marl? 0
High Organic? 0
Waterbody Name: WEST OTTER LAKE
Waterbody ID:
Total # of Species
CanopyAbundance at Site: S: N: F: E: 7

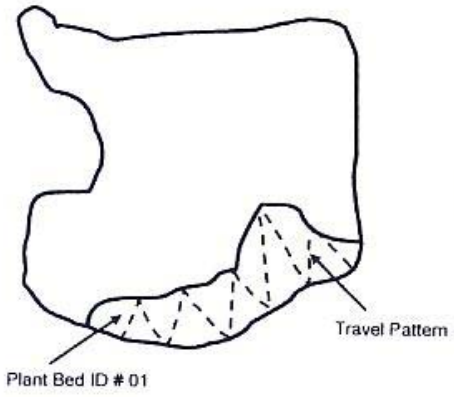
SITE COORDINATES

Center of the Bed
Latitude:
Longitude:
Max. Lakeward Extent of Bed
Latitude:
Longitude:

SPECIES INFORMATION

Species Code	Abundance	QE	Vchr.	Ref. ID
CH?AR ✓	2			
MYSP2 ✓	3			
MYHE				
POIL.				
POCR3 ✓	2			
ALGA				
POPR5				
UTMA				
NAFL				
POPE6				
CEDE ✓	3			
POZO ✓	1			
(				
POCH ✓	1			
SC SP ✓	1			
LYSA				
NYTU ✓	2			
SACU				
ARUM				
NULU ✓	2			
TYLA ✓	1			
TYAN				

Individual Plant Bed Survey



Comments:

REMINDER INFORMATION

Substrate:
1 = Silt/Clay
2 = Silt w/Sand
3 = Sand w/Silt
4 = Hard Clay
5 = Gravel/Rock
6 = Sand

Marl
1 = Present
0 = absent

High Organic
1 = Present
0 = absent

Overall Surface Cover
N = Nonrooted floating
F = Floating, rooted
E = Emergent
S = Submersed

Canopy:
1 = < 2%
2 = 2-20%
3 = 21-60%
4 = > 60%

Abundance:
1 = < 2%
2 = 2-20%
3 = 21-60%
4 = > 60%

QE Code:
0 = as defined
1 = Species suspe
2 = Genus suspected
3 = Unknown

Voucher:
0 = Not Taken
1 = Taken, not varified
2 = Taken, varifie

Reference ID:
Unique number or letter to denote specific location of a species; referenced on attached map

Aquatic Vegetation Plant Bed Data Sheet

Page ___ of ___

State of Indiana Department of Natural Resources

ORGANIZATION: AQUATIC ENHANCEMENT & SURVEY, INC.

DATE: 5/15/06

SITE INFORMATION

Plant Bed ID: 20

Waterbody Name: WEST OTTER LAKE

Bed Size:

Substrate: 2

Waterbody ID:

Marl? 1

Total # of Species

High Organic? 0

Canopy Abundance at Site

S: N: F: E: 3

SITE COORDINATES

Center of the Bed

Latitude:

Longitude:

Max. Lakeward Extent of Bed

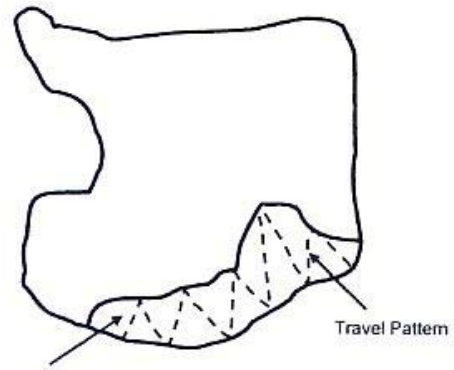
Latitude:

Longitude:

SPECIES INFORMATION

Species Code	Abundance	QE	Vchr.	Ref. ID
CH?AR ✓	3			
MYSP2 ✓	2			
MYHE ✓	2			
POIL ✓	2			
POCR3 ✓	3			
ALGA				
POPR5				
UTMA				
NAFL				
POPE6				
ELCA ✓	2			
SA SPV	1			
POHORNEDO ✓	1			
IRB1 ✓	1			
LYSA				
NYTU ✓	1			
SACU				
ARUM				
NULU				
TYLA				
TYAN				

Individual Plant Bed Survey



Comments:

REMINDER INFORMATION

Substrate:
1 = Silt/Clay
2 = Silt w/Sand
3 = Sand w/Silt
4 = Hard Clay
5 = Gravel/Rock
6 = Sand

Marl
1 = Present
0 = absent

High Organic
1 = Present
0 = absent

Overall Surface Cover
N = Nonrooted floating
F = Floating, rooted
E = Emergent
S = Submersed

Canopy:
1 = < 2%
2 = 2-20%
3 = 21-60%
4 = > 60%

Abundance:
1 = < 2%
2 = 2-20%
3 = 21-60%
4 = > 60%

QE Code:
0 = as defined
1 = Species suspc
2 = Genus suspected
3 = Unknown

Voucher:
0 = Not Taken
1 = Taken, not varified
2 = Taken, varifiec

Reference ID:
Unique number or letter to denote specific location of a species; referenced on attached map

Appendix B Tier I Data Sheets 8/06

Tier I

8

Aquatic Vegetation Reconnaissance Sampling

Waterbody Cover Sheet

Surveying Organization: AQUATIC ENHANCEMENT & SURVEY, INC.

Waterbody Name: WEST OTTER LAKE Lake ID:

County: STEUBEN Date: 8/4/06

Habitat Stratum: 1L Ave. Lake Depth (ft): 17 Lake Level:

GPS Metadata

Crew Leader: SB NAD 27 | 16 | +/- 6m

Datum: Zone: Accuracy:

Recorder: Method: WAAS GPS

Secchi Depth (ft): 5.3 Total # of Plant Beds Surveyed: 20 Total # of Species:

Littoral Zone Size (acres): 65

- ☐ Measured
- ☒ Estimated

Littoral Zone Max. Depth (ft): 10 LIMIT OF PLANT GROWTH

- ☑ Measured
- ☐ Estimate (historical Secchi)
- ☐ Estimated (current Secchi)

Notable Conditions: RAINFALL PRECEDED SURVEY. RAINFALL DURING SURVEY. WATER CLARITY HAS SUFFERED. LAKE APPROX. 4" HIGH

Aquatic Vegetation Plant Bed Data Sheet

Page ___ of ___

State of Indiana Department of Natural Resources

ORGANIZATION: AQUATIC ENHANCEMENT & SURVEY, INC.

DATE: 8/4/06

SITE INFORMATION

Plant Bed ID: 1

Waterbody Name: WEST OTTER LAKE

Bed Size:

Substrate: 3

Waterbody ID:

Marl? 0

Total # of Species 54 E

High Organic? 0

CanopyAbundance at Site

S: | N: | F: | E: 3

SITE COORDINATES

Center of the Bed

Latitude:

Longitude:

Max. Lakeward Extent of Bed

Latitude:

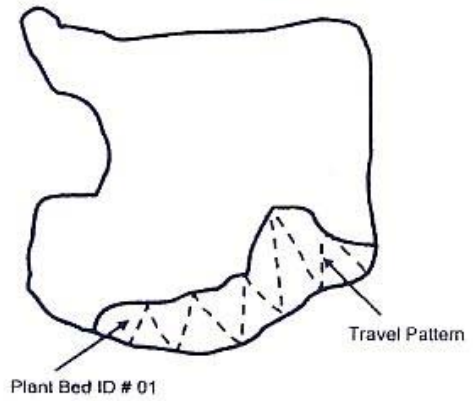
Longitude:

SPECIES INFORMATION

CEPE ✓ 3

Species Code	Abundance	QE	Vchr.	Ref. ID
CH ?AR				
MYSP2 ✓	2			
MYHE				
POIL				
POCR3				
ALGA ✓	2			
POPR5				
UTMA				
NAFL				
POPE6				
ELCA ✓	2			
ZAPA (HUAN)				
POPE				
Swamplouse ✓				
IRVI ✓	2			
LYSA				
NYTU ✓	3			
SA ✓	3			
ARUM				
NULU				
TYLA				
POCO				

Individual Plant Bed Survey



Comments:

REMINDER INFORMATION

Substrate:
1 = Silt/Clay
2 = Silt w/Sand
3 = Sand w/Silt
4 = Hard Clay
5 = Gravel/Rock
6 = Sand

Marl
1 = Present
0 = absent

High Organic
1 = Present
0 = absent

Overall Surface Cover
N = Nonrooted floating
F = Floating, rooted
E = Emergent
S = Submersed

Canopy:
1 = < 2%
2 = 2-20%
3 = 21-60%
4 = > 60%

Abundance:
1 = < 2%
2 = 2-20%
3 = 21-60%
4 = > 60%

QE Code:
0 = as defined
1 = Species suspe
2 = Genus suspected
3 = Unknown

Voucher:
0 = Not Taken
1 = Taken, not varified
2 = Taken, varifie

Reference ID:
Unique number or letter to denote specific location of a species; referenced on attached map

Aquatic Vegetation Plant Bed Data Sheet

Page ___ of ___

State of Indiana Department of Natural Resources

ORGANIZATION: AQUATIC ENHANCEMENT & SURVEY, INC. DATE: 8/4/06

SITE INFORMATION

Plant Bed ID: 2
Waterbody Name: WEST OTTER LAKE
Bed Size:
Substrate:
Waterbody ID:
Marl?
Total # of Species
High Organic?
Canopy Abundance at Site
S: N: F: E:

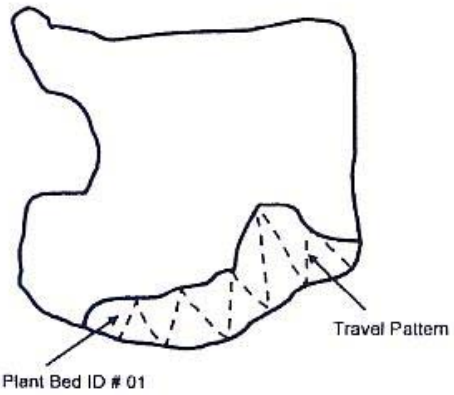
SITE COORDINATES

Center of the Bed
Latitude:
Longitude:
Max. Lakeward Extent of Bed
Latitude:
Longitude:

SPECIES INFORMATION

Species Code	Abundance	QE	Vchr.	Ref. ID
CEDE ✓ 3				
CH?AR ✓	2			
MYSP2				
MYHE				
POIL				
POCR3 ✓	1			
ALGAL ✓	3			
POPR5				
UTMA ✓	2			
NAFL				
POPE6 ✓	1			
ELCA ✓	3			
ZAPA (HDAN)				
POPE				
Swamplouse				
IRVI ✓	1			
LYSA				
NYTU ✓	2			
SASP. ✓	2			
ARUM				
NULU ✓	2			
TYLA				
POCO				

Individual Plant Bed Survey



Comments:

- MOSTLY CEDE, ELCA, DEAD CHARA
- ALGAE ABUNDANT NEAR END OF CHANNEL
- NO MYSP NOTED

REMINDER INFORMATION

Substrate:
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3 = Sand w/Silt
4 = Hard Clay
5 = Gravel/Rock
6 = Sand

Marl
1 = Present
0 = absent

High Organic
1 = Present
0 = absent

Overall Surface Cover
N = Nonrooted floating
F = Floating, rooted
E = Emergent
S = Submersed

Canopy:
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2 = 2-20%
3 = 21-60%
4 = > 60%

Abundance:
1 = < 2%
2 = 2-20%
3 = 21-60%
4 = > 60%

QE Code:
0 = as defined
1 = Species susp
2 = Genus suspected
3 = Unknown

Voucher:
0 = Not Taken
1 = Taken, not verified
2 = Taken, verified

Reference ID:
Unique number or letter to denote specific location of a species; referenced on attached map

Aquatic Vegetation Plant Bed Data Sheet

Page ___ of ___

State of Indiana Department of Natural Resources

ORGANIZATION: AQUATIC ENHANCEMENT & SURVEY, INC. DATE: 8/4/06

SITE INFORMATION

Plant Bed ID: 3
Bed Size:
Substrate: 2
Marl? 0
High Organic? 1

Waterbody Name: WEST OTTER LAKE
Waterbody ID:
Total # of Species 55 E 3

Canopy Abundance at Site: S: N: F: E:

SITE COORDINATES

Center of the Bed
Latitude:
Longitude:

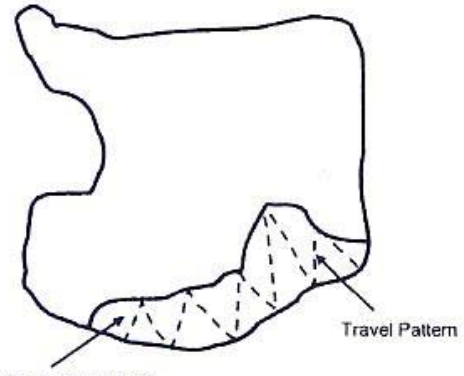
Max. Lakeward Extent of Bed
Latitude:
Longitude:

SPECIES INFORMATION

EDE - 2

Species Code	Abundance	QE	Vchr.	Ref. ID
CH?AR				
MYSP2 ✓	1			
MYHE				
POIL				
POCR3 ✓	1			
ALGA				
POPR5				
UTMA				
NAFL ✓	3			
POPE6				
ELCAL	4			
ZAPA(HDAN)				
POPE				
Swamplouse				
IRVI				
LYSA				
NYTU ✓	2			
SASp. ✓	2			
ARUM				
NULU				
TYLA ✓	1			
POCO				

Individual Plant Bed Survey



Comments:

- MIDDLE CHANNEL
- LITE TURBIDITY AGAIN NEAR END
- (EXTENDS APPROX. ½ DOWN CHAN.)
POSSIBLE FEN? - RON SAYS NO TIVE

REMINDER INFORMATION

Substrate:
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2 = Silt w/Sand
3 = Sand w/Silt
4 = Hard Clay
5 = Gravel/Rock
6 = Sand

Marl
1 = Present
0 = absent

High Organic
1 = Present
0 = absent

Overall Surface Cover
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F = Floating, rooted
E = Emergent
S = Submersed

Canopy:
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3 = 21-60%
4 = > 60%

Abundance:
1 = < 2%
2 = 2-20%
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4 = > 60%

QE Code:
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Voucher:
0 = Not Taken
1 = Taken, not varified
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Reference ID:
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Aquatic Vegetation Plant Bed Data Sheet

Page ___ of ___

State of Indiana Department of Natural Resources

ORGANIZATION: AQUATIC ENHANCEMENT & SURVEY, INC. DATE: 8/4/06

SITE INFORMATION

Plant Bed ID: 4
Bed Size:
Substrate: 2
Marl? 0
High Organic? 0

Waterbody Name: WEST OTTER LAKE
Waterbody ID:
Total # of Species 59 E4

CanopyAbundance at Site

S:	N:	F:	E:

SITE COORDINATES

Center of the Bed
Latitude:
Longitude:

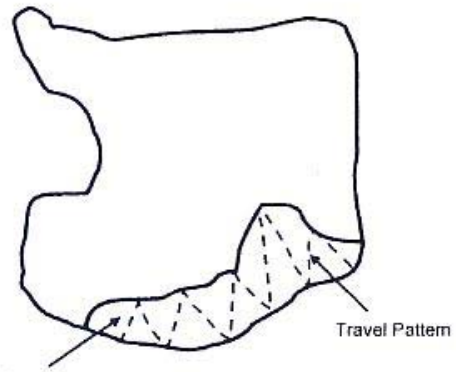
Max. Lakeward Extent of Bed
Latitude:
Longitude:

SPECIES INFORMATION

Species Code	Abundance	QE	Vchr.	Ref. ID
CH?AR ✓	3			
MYSP2 ✓	1			
MYHE				
POIL				
POCR3				
ALGA				
POPR5				
UTMA ✓	1			
NAFL ✓	3			
POPE6 ✓	3			
ELCA ✓	2			
ZAPA(NOAN)				
POPE				
Swamp Louse				
IRVI				
LYSA				
NYTU ✓ 1				
SASP 1				
ARUM				
NULU				
TYLA				
POCO ✓ 2				

CEDEL 2
POGR ✓ 1
PORI ✓ 2
SCSP ✓ 1

Individual Plant Bed Survey



Comments:

PORI - (NEW?)
PDGR - (NEW?)
LOTS OF SAGO

REMINDER INFORMATION

Substrate:
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3 = Sand w/Silt
4 = Hard Clay
5 = Gravel/Rock
6 = Sand

Marl
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0 = absent

High Organic
1 = Present
0 = absent

Overall Surface Cover
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F = Floating, rooted
E = Emergent
S = Submersed

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3 = 21-60%
4 = > 60%

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2 = 2-20%
3 = 21-60%
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2 = Genus suspected
3 = Unknown

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Reference ID:
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Aquatic Vegetation Plant Bed Data Sheet

Page ___ of ___

State of Indiana Department of Natural Resources

ORGANIZATION: AQUATIC ENHANCEMENT & SURVEY, INC.

DATE: 8/4/06

SITE INFORMATION

Plant Bed ID: 5

Waterbody Name: WEST OTTER LAKE

Bed Size:

Substrate: 2

Waterbody ID:

Marl? 0

Total # of Species 510 E4

High Organic? 1

Canopy Abundance at Site

S: 1 N: F: E: 2

SITE COORDINATES

Center of the Bed

Latitude:

Longitude:

Max. Lakeward Extent of Bed

Latitude:

Longitude:

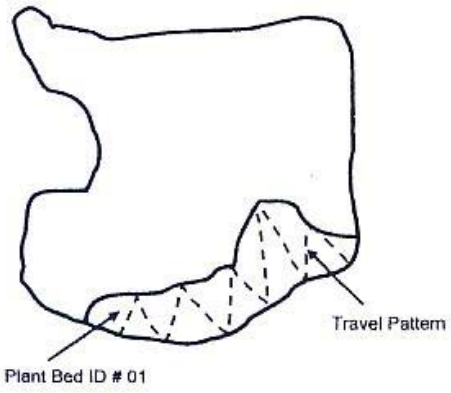
SPECIES INFORMATION

Species Code	Abundance	QE	Vchr.	Ref. ID
CH?AR ✓	2			
MYSP2 ✓	3			
MYHE ✓	2			
POIL				
POCR3 ✓	1			
ALGA ✓	3			
POPR5 ✓	1			
UTMA ✓	3			
NAFL ✓	3			
POPE6				
ELCA ✓	2			
ZAPA (HOAR)				
POPE				
Swamp Loose				
IRVI				
LYSA				
NYTU ✓	2			
SASP ✓	2			
ARUM				
NULU				
TYLA ✓	1			
POCO				

CEDE 3

PLANT SWAMP REED ✓ 2

Individual Plant Bed Survey



Comments:

SOUTH CHANNEL

REMINDER INFORMATION

Substrate:
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5 = Gravel/Rock
6 = Sand

Marl
1 = Present
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High Organic
1 = Present
0 = absent

Overall Surface Cover
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E = Emergent
S = Submersed

Canopy:
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Reference ID:
Unique number or letter to denote specific location of a species; referenced on attached map

Aquatic Vegetation Plant Bed Data Sheet

Page ___ of ___

State of Indiana Department of Natural Resources

ORGANIZATION: AQUATIC ENHANCEMENT & SURVEY, INC. DATE: 8/ /06

SITE INFORMATION

Plant Bed ID: 6

Waterbody Name: WEST OTTER LAKE

Bed Size:

Substrate:

Waterbody ID:

Marl?

Total # of Species

High Organic?

Canopy Abundance at Site

S: N: F: E:

SITE COORDINATES

Center of the Bed

Latitude:

Longitude:

Max. Lakeward Extent of Bed

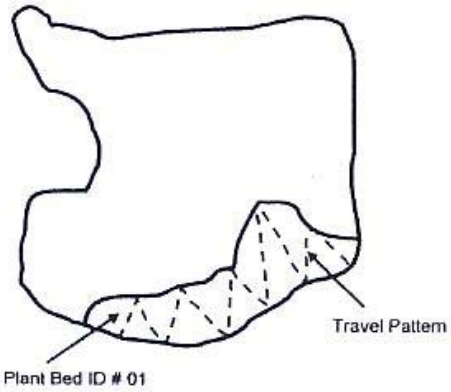
Latitude:

Longitude:

SPECIES INFORMATION

Species Code	Abundance	QE	Vchr.	Ref. ID
CH?AR				
MYSP2				
MYHE				
POIL				
POCR3				
ALGA				
POPR5				
UTMA				
NAFL				
POPE6				
ELCA				
ZAPA(HDAN)				
POPE				
Swamplouse				
IRVI				
LYSA				
NYTU				
SA				
ARUM				
NULU				
TYLA				
POCO				

Individual Plant Bed Survey



Comments:

REMINDER INFORMATION

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Abundance:
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Aquatic Vegetation Plant Bed Data Sheet

Page ___ of ___

State of Indiana Department of Natural Resources

ORGANIZATION: AQUATIC ENHANCEMENT & SURVEY, INC. DATE: 8/ /06

SITE INFORMATION

Plant Bed ID:

Waterbody Name: WEST OTTER LAKE

Bed Size:

Substrate:

Waterbody ID:

Marl?

Total # of Species

High Organic?

CanopyAbundance at Site

S: N: F: E:

SITE COORDINATES

Center of the Bed

Latitude:

Longitude:

Max. Lakeward Extent of Bed

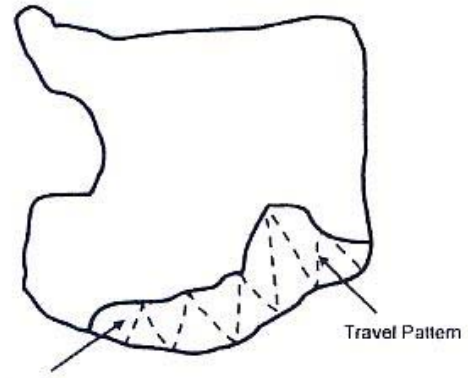
Latitude:

Longitude:

SPECIES INFORMATION

Species Code	Abundance	QE	Vchr.	Ref. ID
CH?AR				
MYSP2				
MYHE				
POIL				
POCR3				
ALGA				
POPR5				
UTMA				
NAFL				
POPE6				
ELCA				
ZAPA(NOAN)				
POPE				
Swamplouse				
IRVI				
LYSA				
NYTU				
SA				
ARUM				
NULU				
TYLA				
POCO				

Individual Plant Bed Survey



Comments:

REMINDER INFORMATION

Substrate:
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Aquatic Vegetation Plant Bed Data Sheet

Page ___ of ___

State of Indiana Department of Natural Resources

ORGANIZATION: AQUATIC ENHANCEMENT & SURVEY, INC.

DATE: 8/ /06

SITE INFORMATION

Plant Bed ID:

Waterbody Name: WEST OTTER LAKE

Bed Size:

Substrate:

Waterbody ID:

Marl?

Total # of Species

High Organic?

Canopy Abundance at Site

S: N: F: E:

SITE COORDINATES

Center of the Bed

Latitude:

Longitude:

Max. Lakeward Extent of Bed

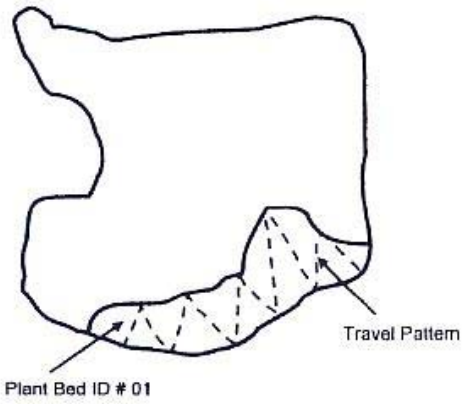
Latitude:

Longitude:

SPECIES INFORMATION

Species Code	Abundance	QE	Vchr.	Ref. ID
CH?AR				
MYSP2				
MYHE				
POIL				
POCR3				
ALGA				
POPR5				
UTMA				
NAFL				
POPE6				
ELCA				
ZAPA(HORN)				
POPE				
Swamplouse				
IRVI				
LYSA				
NYTU				
SA				
ARUM				
NULU				
TYLA				
POCO				

Individual Plant Bed Survey



Comments:

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Aquatic Vegetation Plant Bed Data Sheet

Page ___ of ___

State of Indiana Department of Natural Resources

ORGANIZATION: AQUATIC ENHANCEMENT & SURVEY, INC. DATE: 8/ /06

SITE INFORMATION

Plant Bed ID:

Bed Size:

Substrate:

Marl?

High Organic?

Waterbody Name: WEST OTTER LAKE

Waterbody ID:

Total # of Species

Canopy Abundance at Site

S:	N:	F:	E:

SITE COORDINATES

Center of the Bed

Latitude:

Longitude:

Max. Lakeward Extent of Bed

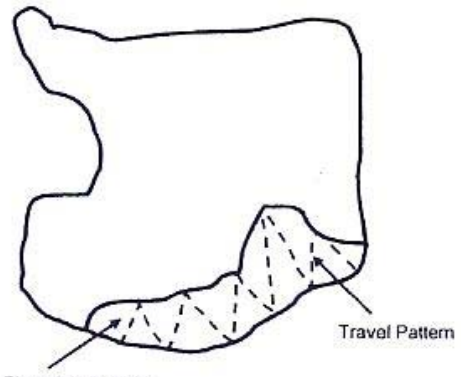
Latitude:

Longitude:

SPECIES INFORMATION

Species Code	Abundance	QE	Vchr.	Ref. ID
CH?AR				
MYSP2				
MYHE				
POIL				
POCR3				
ALGA				
POPR5				
UTMA				
NAFL				
POPE6				
ELCA				
ZAPA(NOAN)				
POPE				
Swamphouse				
IRVI				
LYSA				
NYTU				
SA				
ARUM				
NULU				
TYLA				
POCO				

Individual Plant Bed Survey



Comments:

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Aquatic Vegetation Plant Bed Data Sheet

Page ___ of ___

State of Indiana Department of Natural Resources

ORGANIZATION: AQUATIC ENHANCEMENT & SURVEY, INC. DATE: 8/ /06

SITE INFORMATION

Plant Bed ID: ____

Bed Size: ____

Substrate: ____

Marl? ____

High Organic? ____

Waterbody Name: WEST OTTER LAKE

Waterbody ID: ____

Total # of Species ____

Canopy Abundance at Site

S:	N:	F:	E:

SITE COORDINATES

Center of the Bed

Latitude: ____

Longitude: ____

Max. Lakeward Extent of Bed

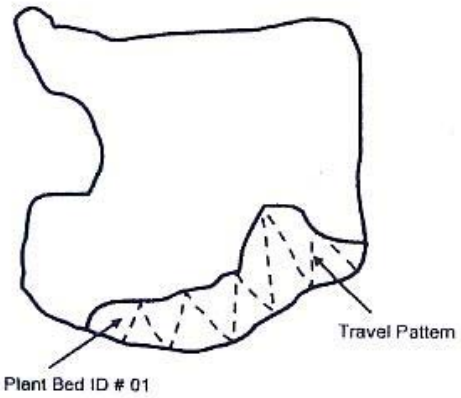
Latitude: ____

Longitude: ____

SPECIES INFORMATION

Species Code	Abundance	QE	Vchr.	Ref. ID
CH?AR				
MYSP2				
MYHE				
POIL				
POCR3				
ALGA				
POPR5				
UTMA				
NAFL				
POPE6				
ELCA				
ZAPA(HOAN)				
POPE				
Swamplouse				
IRVI				
LYSA				
NYTU				
SA				
ARUM				
NULU				
TYLA				
POCO				

Individual Plant Bed Survey



Comments:

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Aquatic Vegetation Plant Bed Data Sheet

Page ___ of ___

State of Indiana Department of Natural Resources

ORGANIZATION: AQUATIC ENHANCEMENT & SURVEY, INC. DATE: 8/ /06

SITE INFORMATION

Plant Bed ID: ,

Waterbody Name: WEST OTTER LAKE

Bed Size:

Substrate:

Waterbody ID:

Marl?

Total # of Species

High Organic?

CanopyAbundance at Site

S: N: F: E:

SITE COORDINATES

Center of the Bed

Latitude:

Longitude:

Max. Lakeward Extent of Bed

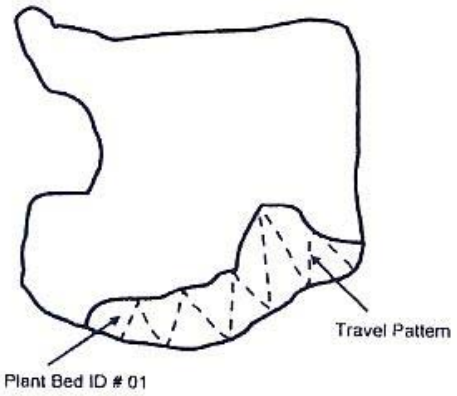
Latitude:

Longitude:

SPECIES INFORMATION

Species Code	Abundance	QE	Vchr.	Ref. ID
CH?AR				
MYSP2				
MYHE				
POIL				
POCR3				
ALGA				
POPR5				
UTMA				
NAFL				
POPE6				
ELCA				
ZAPA(HOAN)				
POPE				
Swamp Loose				
IRVI				
LYSA				
NYTU				
SA				
ARUM				
NULU				
TYLA				
POCO				

Individual Plant Bed Survey



Comments:

REMINDER INFORMATION

Substrate:
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6 = Sand

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1 = < 2%
2 = 2-20%
3 = 21-60%
4 = > 60%

Abundance:
1 = < 2%
2 = 2-20%
3 = 21-60%
4 = > 60%

QE Code:
0 = as defined
1 = Species suspe
2 = Genus suspected
3 = Unknown

Voucher:
0 = Not Taken
1 = Taken, not varified
2 = Taken, varifie

Reference ID:
Unique number or letter to denote specific location of a species; referenced on attached map

Aquatic Vegetation Plant Bed Data Sheet

Page ___ of ___

State of Indiana Department of Natural Resources

ORGANIZATION: AQUATIC ENHANCEMENT & SURVEY, INC.

DATE: 8/ /06

SITE INFORMATION

Plant Bed ID: ,

Bed Size:

Substrate:

Marl?

High Organic?

Waterbody Name: WEST OTTER LAKE

Waterbody ID:

Total # of Species

CanopyAbundance at Site

S: N: F: E:

SITE COORDINATES

Center of the Bed

Latitude:

Longitude:

Max. Lakeward Extent of Bed

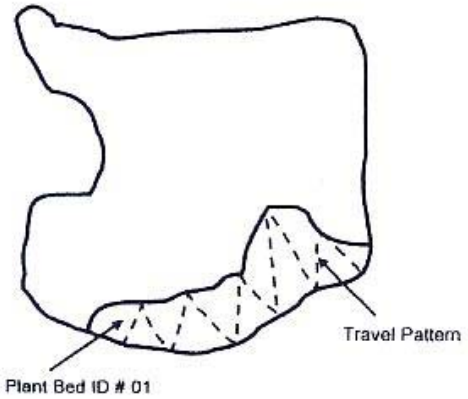
Latitude:

Longitude:

SPECIES INFORMATION

Species Code	Abundance	QE	Vchr.	Ref. ID
CH?AR				
MYSP2				
MYHE				
POIL				
POCR3				
ALGA				
POPR5				
UTMA				
NAFL				
POPE6				
ELCA				
ZAPA(HUAN)				
POPE				
Swamplouse				
IRVI				
LYSA				
NYTU				
SA				
ARUM				
NULU				
TYLA				
POCO				

Individual Plant Bed Survey



Comments:

REMINDER INFORMATION

Substrate:
1 = Silt/Clay
2 = Silt w/Sand
3 = Sand w/Silt
4 = Hard Clay
5 = Gravel/Rock
6 = Sand

Marl
1 = Present
0 = absent

High Organic
1 = Present
0 = absent

Overall Surface Cover
N = Nonrooted floating
F = Floating, rooted
E = Emergent
S = Submersed

Canopy:
1 = < 2%
2 = 2-20%
3 = 21-60%
4 = > 60%

Abundance:
1 = < 2%
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Aquatic Vegetation Plant Bed Data Sheet

Page ___ of ___

State of Indiana Department of Natural Resources

ORGANIZATION: AQUATIC ENHANCEMENT & SURVEY, INC.

DATE: 8/ /06

SITE INFORMATION

Plant Bed ID:

Waterbody Name: WEST OTTER LAKE

Bed Size:

Substrate:

Waterbody ID:

Marl?

Total # of Species

High Organic?

Canopy Abundance at Site

S: N: F: E:

SITE COORDINATES

Center of the Bed

Latitude:

Longitude:

Max. Lakeward Extent of Bed

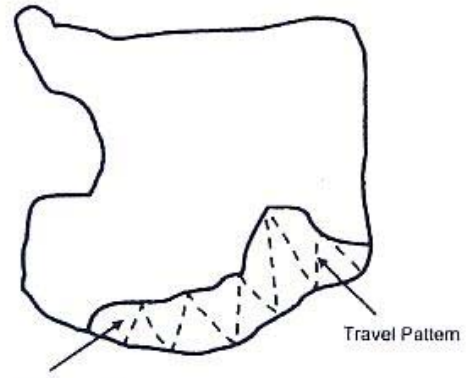
Latitude:

Longitude:

SPECIES INFORMATION

Species Code	Abundance	QE	Vchr.	Ref. ID
CH?AR				
MYSP2				
MYHE				
POIL				
POCR3				
ALGA				
POPR5				
UTMA				
NAFL				
POPE6				
ELCA				
ZAPA (NOAN)				
POPE				
Swamp Loose				
IRVI				
LYSA				
NYTU				
SA				
ARUM				
NULU				
TYLA				
POCO				

Individual Plant Bed Survey



Comments:

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Substrate:
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High Organic
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Reference ID:
Unique number or letter to denote specific location of a species; referenced on attached map

Aquatic Vegetation Plant Bed Data Sheet

Page ___ of ___

State of Indiana Department of Natural Resources

ORGANIZATION: AQUATIC ENHANCEMENT & SURVEY, INC. DATE: 8/ /06

SITE INFORMATION

Plant Bed ID: ,

Waterbody Name: WEST OTTER LAKE

Bed Size:

Substrate:

Waterbody ID:

Marl?

Total # of Species

High Organic?

Canopy Abundance at Site

S: N: F: E:

SITE COORDINATES

Center of the Bed

Latitude:

Longitude:

Max. Lakeward Extent of Bed

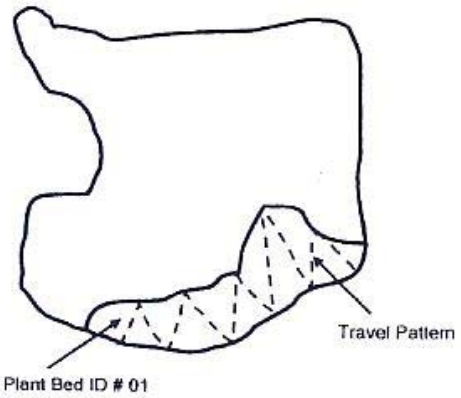
Latitude:

Longitude:

SPECIES INFORMATION

Species Code	Abundance	QE	Vchr.	Ref. ID
CH?AR				
MYSP2				
MYHE				
POIL				
POCR3				
ALGA				
POPR5				
UTMA				
NAFL				
POPE6				
ELCA				
ZAPA(HOAN)				
POPE				
Swamplouse				
IRVI				
LYSA				
NYTU				
SA				
ARUM				
NULU				
TYLA				
POCO				

Individual Plant Bed Survey



Comments:

REMINDER INFORMATION

Substrate:
1 = Silt/Clay
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5 = Gravel/Rock
6 = Sand

Marl
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1 = < 2%
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2 = Genus suspected
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Voucher:
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1 = Taken, not varified
2 = Taken, varifie

Reference ID:
Unique number or letter to denote specific location of a species; referenced on attached map

Aquatic Vegetation Plant Bed Data Sheet

Page ___ of ___

State of Indiana Department of Natural Resources

ORGANIZATION: AQUATIC ENHANCEMENT & SURVEY, INC. DATE: 8/ /06

SITE INFORMATION

Plant Bed ID: ,

Bed Size:

Substrate:

Marl?

High Organic?

Waterbody Name: WEST OTTER LAKE

Waterbody ID:

Total # of Species

CanopyAbundance at Site

S: N: F: E:

SITE COORDINATES

Center of the Bed

Latitude:

Longitude:

Max. Lakeward Extent of Bed

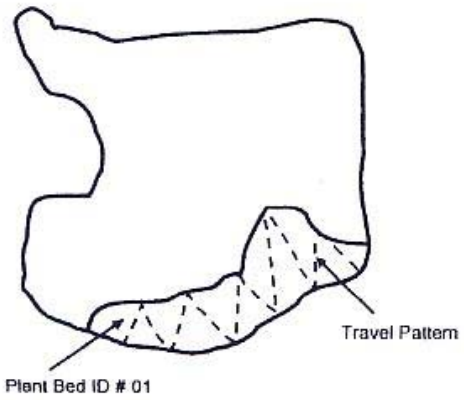
Latitude:

Longitude:

SPECIES INFORMATION

Species Code	Abundance	QE	Vchr.	Ref. ID
CH?AR				
MYSP2				
MYHE				
POIL				
POCR3				
ALGA				
POPR5				
UTMA				
NAFL				
POPE6				
ELCA				
ZAPA(HDAN)				
POPE				
SwampGrass				
IRVI				
LYSA				
NYTU				
SA				
ARUM				
NULU				
TYLA				
POCO				

Individual Plant Bed Survey



Comments:

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Aquatic Vegetation Plant Bed Data Sheet

Page ___ of ___

State of Indiana Department of Natural Resources

ORGANIZATION: AQUATIC ENHANCEMENT & SURVEY, INC.

DATE: 8/ /06

SITE INFORMATION

Plant Bed ID:

Waterbody Name: WEST OTTER LAKE

Bed Size:

Substrate: 2

Waterbody ID:

Marl? 0

Total # of Species

High Organic? 0

Canopy Abundance at Site

S: N: F: E:

SITE COORDINATES

Center of the Bed

Latitude:

Longitude:

Max. Lakeward Extent of Bed

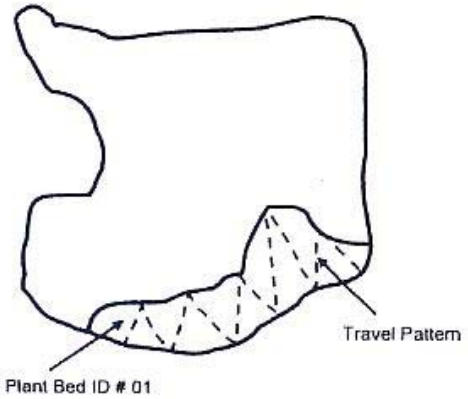
Latitude:

Longitude:

SPECIES INFORMATION

Species Code	Abundance	QE	Vchr.	Ref. ID
CH?AR				
MYSP2				
MYHE				
POIL				
POCR3				
ALGA				
POPR5				
UTMA				
NAFL				
POPE6				
ELCA				
ZAPA(HOAN)				
POPE				
Swampweed				
IRVI				
LYSA				
NYTU				
SA				
ARUM				
NULU				
TYLA				
POCO				

Individual Plant Bed Survey



Comments:

REMINDER INFORMATION

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Reference ID:
Unique number or letter to denote specific location of a species; referenced on attached map

Aquatic Vegetation Plant Bed Data Sheet

Page ___ of ___

State of Indiana Department of Natural Resources

ORGANIZATION: AQUATIC ENHANCEMENT & SURVEY, INC.

DATE: 8/ /06

SITE INFORMATION

Plant Bed ID: 1

Waterbody Name: WEST OTTER LAKE

Bed Size:

Substrate:

Waterbody ID:

Marl?

Total # of Species

High Organic?

Canopy Abundance at Site

S: N: F: E:

SITE COORDINATES

Center of the Bed

Latitude:

Longitude:

Max. Lakeward Extent of Bed

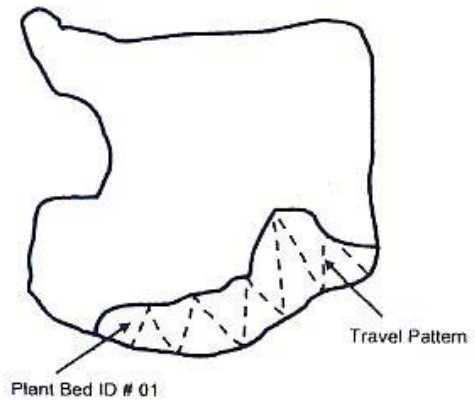
Latitude:

Longitude:

SPECIES INFORMATION

Species Code	Abundance	QE	Vchr.	Ref. ID
CH?AR				
MYSP2				
MYHE				
POIL				
POCR3				
ALGA				
POPR5				
UTMA				
NAFL				
POPE6				
ELCA				
ZAPA (HDAN)				
POPE				
Swamplouse				
IRVI				
LYSA				
NYTU				
SA				
ARUM				
NULU				
TYLA				
POCO				

Individual Plant Bed Survey



Comments:

REMINDER INFORMATION

Substrate:
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Unique number or letter to denote specific location of a species; referenced on attached map

Aquatic Vegetation Plant Bed Data Sheet

Page ___ of ___

State of Indiana Department of Natural Resources

ORGANIZATION: AQUATIC ENHANCEMENT & SURVEY, INC.

DATE: 8/ /06

SITE INFORMATION

Plant Bed ID:

Bed Size:

Substrate:

Marl?

High Organic?

Waterbody Name: WEST OTTER LAKE

Waterbody ID:

Total # of Species

CanopyAbundance at Site

S: N: F: E:

SITE COORDINATES

Center of the Bed

Latitude:

Longitude:

Max. Lakeward Extent of Bed

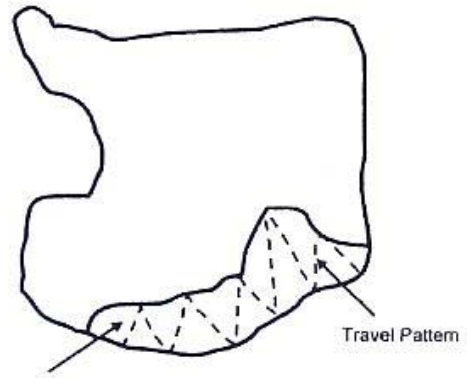
Latitude:

Longitude:

SPECIES INFORMATION

Species Code	Abundance	QE	Vchr.	Ref. ID
CH?AR				
MYSP2				
MYHE				
POIL				
POCR3				
ALGA				
POPR5				
UTMA				
NAFL				
POPE6				
ELCA				
ZAPA(NOAN)				
POPE				
Swamplouse				
IRVI				
LYSA				
NYTU				
SA				
ARUM				
NULU				
TYLA				
POCO				

Individual Plant Bed Survey



Comments:

REMINDER INFORMATION

Substrate:
1 = Silt/Clay
2 = Silt w/Sand
3 = Sand w/Silt
4 = Hard Clay
5 = Gravel/Rock
6 = Sand

Marl
1 = Present
0 = absent

High Organic
1 = Present
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Overall Surface Cover
N = Nonrooted floating
F = Floating, rooted
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Canopy:
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2 = 2-20%
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Voucher:
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1 = Taken, not varified
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Reference ID:
Unique number or letter to denote specific location of a species; referenced on attached map

Aquatic Vegetation Plant Bed Data Sheet

Page ___ of ___

State of Indiana Department of Natural Resources

ORGANIZATION: AQUATIC ENHANCEMENT & SURVEY, INC. DATE: 8/ /06

SITE INFORMATION

Plant Bed ID:

Waterbody Name: WEST OTTER LAKE

Bed Size:

Substrate:

Waterbody ID:

Marl?

Total # of Species

High Organic?

Canopy Abundance at Site

S: N: F: E:

SITE COORDINATES

Center of the Bed

Latitude:

Longitude:

Max. Lakeward Extent of Bed

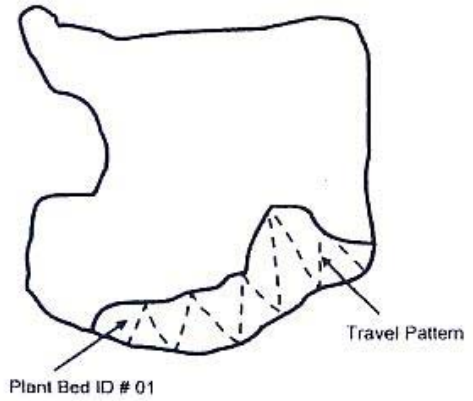
Latitude:

Longitude:

SPECIES INFORMATION

Species Code	Abundance	QE	Vchr.	Ref. ID
CH?AR				
MYSP2				
MYHE				
POIL				
POCR3				
ALGA				
POPR5				
UTMA				
NAFL				
POPE6				
ELCA				
ZAPA(HORN)				
POPE				
Swamplouse				
IRVI				
LYSA				
NYTU				
SA				
ARUM				
NULU				
TYLA				
POCO				

Individual Plant Bed Survey



Comments:

REMINDER INFORMATION

Substrate:
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Voucher:
0 = Not Taken
1 = Taken, not varified
2 = Taken, varifie

Reference ID:
Unique number or letter to denote specific location of a species; referenced on attached map

Aquatic Vegetation Plant Bed Data Sheet

Page ___ of ___

State of Indiana Department of Natural Resources

ORGANIZATION: AQUATIC ENHANCEMENT & SURVEY, INC.

DATE: 8/4/06

SITE INFORMATION

Plant Bed ID: 20

Waterbody Name: WEST OTTER LAKE

Bed Size:

Substrate: 2

Waterbody ID:

Marl?

Total # of Species

High Organic?

CanopyAbundance at Site

S: N: F: E: 3

SITE COORDINATES

Center of the Bed

Latitude:

Longitude:

Max. Lakeward Extent of Bed

Latitude:

Longitude:

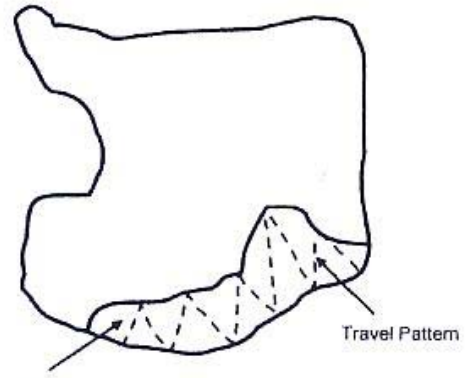
SPECIES INFORMATION

Species Code	Abundance	QE	Vchr.	Ref. ID
CH?AR ✓	3			
MYSP2 ✓	1			
MYHE				
POIL ✓	2			
POCR3				
ALGA				
POPR5				
UTMA ✓	1			
NAFL ✓	3			
POPE6 ✓	3			
ELCA ✓	1			
ZAPA(HOAH)				
POPE				
Swamplouse				
IRVI				
LYSA				
NYTU	3			
SA				
ARUM				
NULU	2			
TYLA				
POCO	2			

EDE ✓

PLANT VER 2

Individual Plant Bed Survey



Comments:

VERY LITTLE MYSP – NO REGROWTH NOTED

REMINDER INFORMATION

Substrate:
1 = Silt/Clay
2 = Silt w/Sand
3 = Sand w/Silt
4 = Hard Clay
5 = Gravel/Rock
6 = Sand

Marl
1 = Present
0 = absent

High Organic
1 = Present
0 = absent

Overall Surface Cover
N = Nonrooted floating
F = Floating, rooted
E = Emergent
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Canopy:
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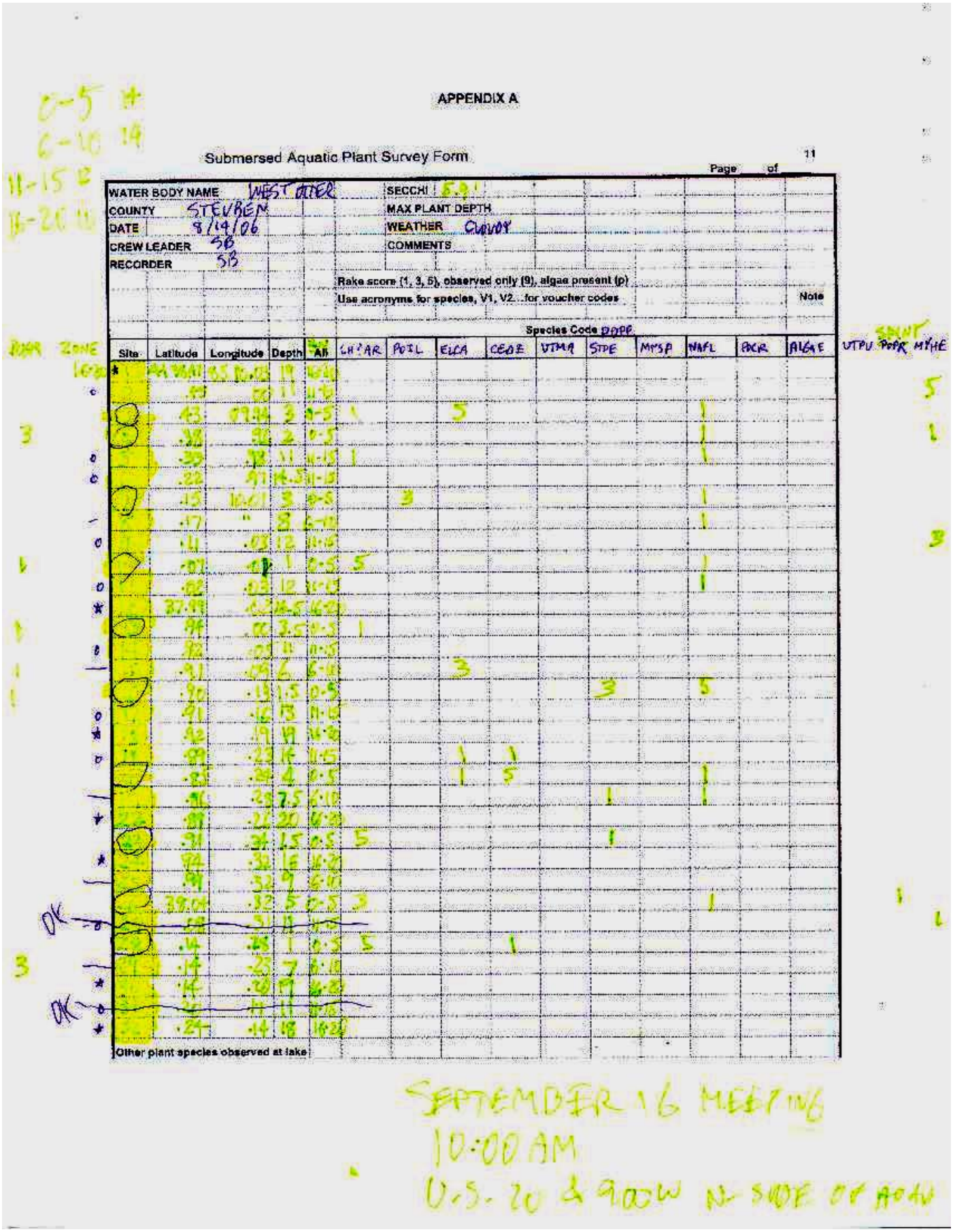
Reference ID:
Unique number or letter to denote specific location of a species; referenced on attached map

Appendix C Tier II Data Sheets 8/06

APPENDIX A



Submersed Aquatic Plant Survey Form

Page 11 of

WATER BODY NAME: WEST OTTER
COUNTY: STEVENS
DATE: 8/19/06
CREW LEADER: SB
RECORDER: SB
SECCHI: 5.9'
MAX PLANT DEPTH:
WEATHER: CLOUDY
COMMENTS:

Rake score (1, 3, 5), observed only (9), algae present (p)
Use acronyms for species, V1, V2...for voucher codes

Species Code POPP

Site	Latitude	Longitude	Depth	Alt	CHAR	POIL	ELCA	CEDE	VIMA	SIDE	MYSP	NAFL	POCR	ALGAE
*	48 38.81	118 [illegible]	19	[illegible]										
	.83	80	11	[illegible]										
	.43	09.44	3	0-5	1		3					1		
	.38	08	2	0-5								1		
	.39	08	11	11-15	1							1		
	.22	07	14.5	11-15										
	.13	10.01	3	0-5		3						1		
	.17	"	8	6-10								1		
	.11	.02	12	11-15										
	.01	.12	1	0-5	5							1		
	.02	.03	12	11-15								1		
	37.98	.02	14.5	11-15										
	.96	.00	3.5	0-5	1									
	.92	.01	11	11-15										
	.91	.04	6	6-10			3							
	.90	.11	1.5	0-5						3		5		
	.91	.16	13	11-15										
	.93	.19	14	11-15										
	.89	.23	14	11-15			1	1						
	.83	.24	4	0-5			1	5				1		
	.86	.33	7.5	6-10						1		1		
	.88	.27	20	16-20										
	.91	.27	1.5	0-5	5					1				
	.94	.32	16	16-20										
	.89	.32	9	6-10										
	38.04	.32	5	0-5	3							1		
	.98	.31	11	11-15										
	.94	.28	1	0-5	5			1						
	.94	.26	7	6-10										
	.94	.20	17	16-20										
	.95	.11	11	11-15										
	.84	.14	18	16-20										

Other plant species observed at lake

SEPTEMBER 16 MEETING
10:00 AM
U.S. 20 & 900W N. SIDE OF ROAD

APPENDIX A

Submersed Aquatic Plant Survey Form

Page of 11

WATER BODY NAME	WEST OTTER	SECCHI	5.7
COUNTY	STEVENS	MAX PLANT DEPTH	
DATE	8/14/06	WEATHER	CLOUDY
CREW LEADER	SB	COMMENTS	
RECORDER	SB		

Rake score (1, 3, 5), observed only (0), algae present (p)

Use acronyms for species, V1, V2...for voucher codes

Note

					Species Code										
Site	Latitude	Longitude	Depth	All	CHAR	POIL	ELCA	CEDE	VTMA	SIDE	MYSP	NAFL	PCR	ALGAE

Other plant species observed at lake

Appendix D 2007 Season IDNR Vegetation Permit Application

APPLICATION FOR AQUATIC VEGETATION CONTROL PERMIT

State Form 26727 (R / 11-03)
Approved State Board of Accounts 1987

☐ Whole Lake ☒ Multiple Treatment Areas
Check type of permit

RUCTIONS: Please print or type information

FOR OFFICE USE ONLY
License No
Date Issued
Lake County

Return to: Page 1 of 3
DEPARTMENT OF NATURAL RESOURCES
Division of Fish and Wildlife
Commercial License Clerk
402 West Washington Street, Room W273
Indianapolis, IN 46204

FEE: $5.00

Applicant's Name	Lake Assoc. Name	
West Otter Lake Assn. Dana Slack	West Otter Lake Association	
Rural Route or Street: 60 Lane 201A West Otter Lake		Phone Number
City and State: Angola, IN 46703		ZIP Code
Certified Applicator (if applicable)	Company or Inc. Name	Certification Number
Rural Route or Street		Phone Number
City and State		ZIP Code

Lake (One application per lake)	Nearest Town	County
West Otter	Angola	Steuben
Does water flow into a water supply		☐ Yes ☒ No

Please complete one section for *EACH* treatment area. Attach lake map showing treatment area and denote location of any water supply intake.

Treatment Area # 1	LAT/LONG or UTM's N41.64411 W85.16744		
Total acres to be controlled: max 15	Proposed shoreline treatment length (ft): max 3250	Perpendicular distance from shoreline (ft): varies (see map)	
Maximum Depth of Treatment (ft): 15	Expected date(s) of treatment(s): 5/25/2007		

tment method: ☒ Chemical ☐ Physical ☐ Biological Control ☐ Mechanical

based on treatment method, describe chemical used, method of physical or mechanical control and disposal area, or the species and stocking rate for biological control: Navigate 2-4-D

Plant survey method: ☒ Rake ☒ Visual ☐ Other (specify)

Aquatic Plant Name	Check if Target Species	Relative Abundance % of Community
Whitstem pw		2.5
Curlyleaf pondweed		2.5
Eurasian watermilfoil	X	5
Chara		20
Variable watermilfoil		10
Coontail		20
Elodea		20
Great Bladderwort		5
Filamentous algae		9
White water lily		2
Arrowhead		2
Spadderdock		2
		100

APPLICATION FOR AQUATIC VEGETATION CONTROL PERMIT

State Form 26727 (R / 11-03)
Approved State Board of Accounts 1967

[ ] Whole Lake [X] Multiple Treatment Areas
Check type of permit

RUCTIONS: Please print or type information

FOR OFFICE USE ONLY
License No.
Date Issued
Lake County

Return to:
DEPARTMENT OF NATURAL RESOURCES
Division of Fish and Wildlife
Commercial License Clerk
402 West Washington Street, Room W273
Indianapolis, IN 46204

FEE: $5.00

Applicant's Name	Lake Assoc. Name	
West Otter Lake Assn. Dana Slack	West Otter Lake Association	
Rural Route or Street: 60Ln 201A West Otter Lake		Phone Number
City and State: Angola, IN 46703		ZIP Code
Certified Applicator (if applicable)	Company or Inc. Name	Certification Number
Rural Route or Street		Phone Number
City and State		ZIP Code

Lake (One application per lake)	Nearest Town	County
West Otter	Angola	Steuben
Does water flow into a water supply		[ ] Yes [X] No

Please complete one section for *EACH* treatment area. Attach lake map showing treatment area and denote location of any water supply intake.

Treatment Area # 2	LAT/LONG or UTM's N41 deg 37' 52.0" W85 deg 10' 12.0"	
Total acres to be controlled 2.86	Proposed shoreline treatment length (ft) 1900	Perpendicular distance from shoreline (ft) varies (see map)
Maximum Depth of Treatment (ft) 15	Expected date(s) of treatment(s) 4/10/2007	

tment method: [X] Chemical [ ] Physical [ ] Biological Control [ ] Mechanical

based on treatment method, describe chemical used, method of physical or mechanical control and disposal area, or the species and stocking rate for biological control. Aquathol K liquid

Plant survey method: [X] Rake [X] Visual [ ] Other (specify)

Aquatic Plant Name	Check if Target Species	Relative Abundance % of Community
Whitstem pw		2.5
Curlyleaf pondweed	X	2.5
Eurasian watermilfoil	X	5
Chara		20
Variable watermilfoil		10
Coontail		20
Elodea		20
Great Bladderwort		5
Filamentous algae		9
White water lily		2
Arrowhead		2
Spadderdock		2
		100

Treatment Area #	LAT/LONG or UTM's	
Total acres to be olled	Proposed shoreline treatment length (ft)	Perpendicular distance from shoreline (ft)
mum Depth of Treatment (ft)	Expected date(s) of treatment(s)	

Treatment method: ☐ Chemical ☐ Physical ☐ Biological Control ☐ Mechanical

Based on treatment method, describe chemical used, method of physical or mechanical control and disposal area, or the species and stocking rate for biological control.

Plant survey method: ☐ Rake ☐ Visual ☐ Other (specify)

Aquatic Plant Name	Check if Target Species	Relative Abundance % of Community

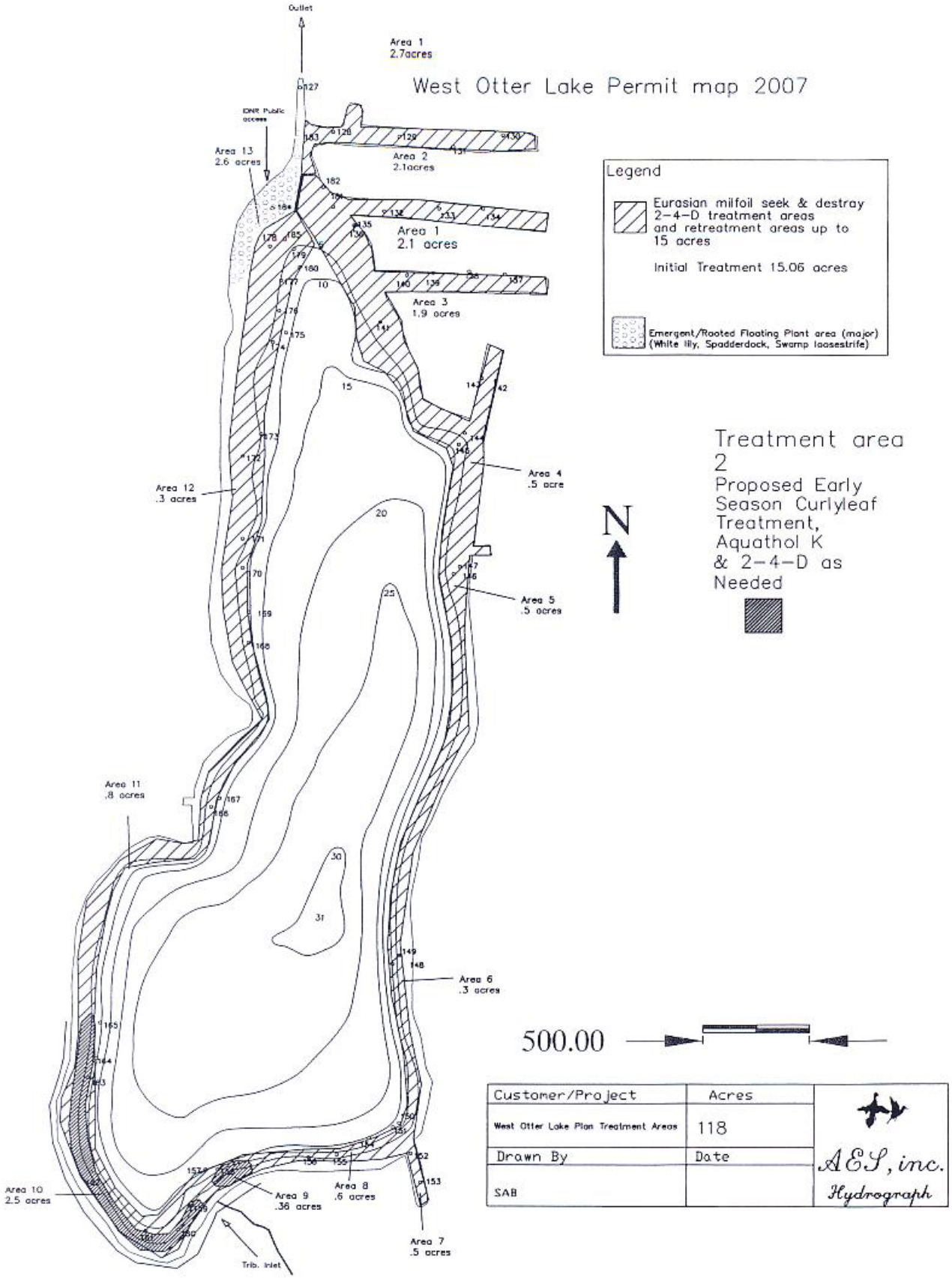
INSTRUCTIONS: Whoever treats the lake fills in "Applicant's Signature" unless they are a professional. If they are a professional company who specializes in lake treatment, they should sign on the "Certified Applicant" line.

Applicant Signature	Date
Certified Applicant's Signature	Date

FOR OFFICE ONLY	
☐ Approved ☐ Disapproved	Fisheries Staff Specialist
☐ Approved ☐ Disapproved	Environmental Staff Specialist

Mail check or money order in the amount of $5.00 to:

DEPARTMENT OF NATURAL RESOURCES
DIVISION OF FISH AND WILDLIFE
COMMERCIAL LICENSE CLERK
402 WEST WASHINGTON STREET ROOM W273
INDIANAPOLIS, IN 46204


West Otter Lake Permit map 2007
Outlet
Area 1
2.7acres
DNR Public access
Area 13
2.6 acres
Area 2
2.1acres
Area 1
2.1 acres
Area 3
1.9 acres
Area 4
.5 acre
Area 5
.5 acres
Area 6
.3 acres
Area 7
.5 acres
Area 8
.6 acres
Area 9
.36 acres
Area 10
2.5 acres
Area 11
.8 acres
Area 12
.3 acres
Trib. Inlet
Legend
Eurasian milfoil seek & destray
2-4-D treatment areas
and retreatment areas up to
15 acres
Initial Treatment 15.06 acres
Emergent/Rooted Floating Plant area (major)
(White lily, Spadderdock, Swamp loosestrife)
Treatment area
2
Proposed Early
Season Curlyleaf
Treatment,
Aquathol K
& 2-4-D as
Needed
N
500.00
Customer/Project
Acres
West Otter Lake Plan Treatment Areas
118
Drawn By
Date
SAB
A&S, inc.
Hydrograph

Appendix E Additional Resources

Calendar of lake management, conferences, classes, and workshops

Lake Pleasant residents can attend the following events to learn more about lake management and converse with other lake associations and lake management professionals regarding treatment programs

2007
March 30th and 31st, Indiana Lakes Management Society conference. Lake Monroe, Bloomington Indiana. More information is available at www.indianalakes.org or by calling 260-665-8226

October 2006, Several local workshops offered by the Indiana Lakes Management Society, dates to be announced. More information is available at www.indianalakes.org or by calling 260-665-8226

Sources of local, state, and federal funding and information

Funding assistance for watershed wetland and grassland restoration is available from:

Ducks Unlimited
Great Lakes/Atlantic Regional Office
331 Metty Drive, Suite #4
Ann Arbor, MI 48103
734-623-2000

Pheasants Forever, Northeast Indiana Chapter
Habitat Officer, Dave Hurley
1003 County Road 8
Corunna, IN 46730

Other help for watershed improvements can be obtained from:

Indiana Department of Natural Resources
Division of Fish and Wildlife Room W265
402 W. Washington Street
Indianapolis, IN 46204-2739
317-233-5468

USDA Natural Resources Conservation Service
1220 N 200W
Angola, IN 46703

Wood-Land-Lakes RC&D
Peachtree Plaza 200

1220 N 200 W -Ste J
Angola, IN 46703
260-665-3211, Ext. 5